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FEB 28 1903

February, 1903. PRAEGER.—*Irish Topographical Botany.* 29

***Clematis Vitalba**, L.

23. WESTMEATH. Reynella and Baronstown—Miss Reynell.

Thalictrum flavum, L.

8. Limerick. Foynes, '02—Miss O'Brien !

Ranunculus penicillatus, Dum.

16. GALWAY W. Barna and Corrib River, '02—Phillips.

18. KING'S CO. Between Roscrea and Birr, '02—Phillips.

38. DOWN. Clanrye River near Sheepbridge, '01 (Lett)—W.B.E.C.,

1901-2.

R. scleratus, L.

7. TIPPERARY S. Cashel, '02 (W. J. Hardy)—Miss Knowles.

15. GALWAY S.E. Oranmore, '02—Phillips.

R. Auricomus, L.

23. Westmeath. Turin, '02 : frequent—Miss Reynell.

***Papaver somniferum**, L.

33. FERMANAGH. Newtownbutler, Belleek, Pettigo, '02—Abraham and M'Cullagh.

P. Rhæas, L.

30. CAVAN. Fields $\frac{1}{2}$ mile S. of Mount Nugent, '02—Barnes !

33. FERMANAGH. Greenhill, '02, long established—Abraham and M'Cullagh.

P. dubium, L.

33. FERMANAGH. Newtownbutler, '02—Abraham and M'Cullagh !

†**P. Argemone**, L.

8. LIMERICK. Foynes, '02—Miss O'Brien !

Brassica alba, Boiss.

7. TIPPERARY S. Garden weed at Cahir, '02—Phillips.

Lepidium hirtum, Smith.

22. Meath. North of Carnross, '02—Barnes !

Crambe maritima, L.

16. GALWAY W. Gentian Hill, one plant on beach, '02—Phillips.

Viola odorata, L.

16. GALWAY W. † Barna, '01—Phillips.

Polygala vulgaris, L.

8. LIMERICK. Thornfields, '01—Miss Armitage.

29. LEITRIM. Lough Rynn, '02—Mrs. Clements !

Lychnis diurna, Sibth.

8. LIMERICK. Thornfields, '01—Miss Armitage.

†**L. vespertina**, Sibth.

23. Westmeath. †Cornfield at Thornton—Miss Reynell.

‡**L. Githago**, Scop.

33. FERMANAGH. Gubbaroo Point, '02—Abraham and M'Cullagh !

Cerastium tetrandrum, Curtis.

7. TIPPERARY S. Railway at Limerick Junction, '02—Phillips.

14. QUEEN'S CO. Abbeyleix and Ballybrophy, '02—Phillips.

23. WESTMEATH. Railway at Athlone, '02—Phillips.

Montia fontana, L.

22. MEATH. Moynalty, '02—Barnes !

23. WESTMEATH. Killucan '02—Miss Reynell !

A

***Hypericum humifusum*, L.**

- 8. LIMERICK. Thornfields, '01—Miss Armitage.
- 22. Meath. Moynalty, '02—Barnes.
- 23. WESTMEATH. Crooked Wood—Miss Reynell.

***Althaea officinalis*, L.**

- 8. LIMERICK. Foynes, '02 (Miss O'Brien)—Miss Knowles.

***Linum angustifolium*, Huds.**

- 8. LIMERICK. Foynes, '02—Miss O'Brien !

***Geranium lucidum*, L.**

- ‡8. DOWN. Helen's Bay ! '02; Stormount Castle, '02; and near Ballywalter—S. A. Moore ! *Killeen—S. A. Stewart.

The standing of this plant in Down is very doubtful. The Helen's Bay station, which I examined last summer, is a spot which I have known thoroughly for twenty years, and I feel confident that *G. lucidum* has only recently appeared there. The road has been repaired lately, and the plant grows on the repaired portion. The other three stations are all roadsides; Mr. Stewart did not publish his Killeen locality, considering the plant a casual. An interesting station in Wexford of Barrett-Hamilton and Moffat's, where the plant, certainly introduced, has formed a roadside colony for some years past, appears to furnish a parallel instance. Soil conditions are against the plant's presence in either county.

***Erodium cicutarium*, L'Hérit.**

- 7. TIPPERARY S. †Rock of Cashel, '02—Phillips.

***Trifolium medium*, Huds.**

- 8. LIMERICK. Cahirmoyle, '02—Miss O'Brien !

***Vicia hirsuta*, Koch.**

- 22. Meath. Moynalty, '02—Barnes !

[*Lathyrus sylvestris*, L.]

- 32. MONAGHAN. Wood at Ballyleck; sown some years ago for fodder and now run wild abundantly, '02—Miss Rosa Kane

***Rubus plicatus*, Wh. & N.**

- II. KILKENNY. Near New Ross, '02—Phillips.

***R. pulcherrimus*, Neum.**

- 3. CORK WEST. Clear Island, '02—Phillips.

***R. villicaulis*, Koehl. (var. *Selmeri* Lindeb.).**

- 8. LIMERICK. Thornfields, '01—Miss Armitage.

***R. argentatus*, P. J. Muell.**

- Sherkin Island, '01—Phillips.

***R. macrophyllus*, Wh. & N.**

- 2. Kerry N. Killarney, '01—H. J. Riddelsdell.

***R. Questieri* II, Lefv. & Muell.**

- 3. CORK WEST. Courtmacsherry, '02—Phillips.

***R. micans*, Gren. & Godr.**

- II. KILKENNY. Near Coppenagh Gap, '02—Phillips.

***R. leucostachys*, Schleich.**

- IO. TIPPERARY N. Roscrea, '02—Phillips.

***R. Borreri*, Bell-Salt.**

- II. KILKENNY. Near Coppenagh Gap, '02—Phillips.

Rubus scaber, Wh. & N.

14. QUEEN'S CO. Ballybrophy, '02—Phillips

R. dumetorum, Wh. & N.8. LIMERICK. Thornfields, '01—Miss Armitage (near *tuberculatus*).

17. GALWAY N.E. Rocky fields near Menlo, '01—Phillips.

R. Koehleri, Wh. & N. (var. *dasyphyllus*).

11. KILKENNY. Graiguenamanagh, '01—Phillips.

13. Carlow. Near Graiguenamanagh, '01—Phillips.

R. corylifolius, Sm. (var. *cyclophyllus*).

7. Tipperary S. Fethard, '02—Phillips.

Dryas octopetala, L.

33. FERMANAGH. Bar of Whealt [= Poulaphuca], '02—Abraham and M'Cullagh.

Geum rivale, L.

8. Limerick. Foynes, '02 (Miss O'Brien)—Miss Knowles.

25. ROSCOMMON. Kilteevan, '98 (Mapother)—Herb. S. & A. M.!

Rosa rubiginosa, L.

8. Limerick. Foynes, '02—Miss O'Brien!

Saxifraga stellaris, L.

33. FERMANAGH. North side of Cuilcagh Mountain, fairly plentiful, '02—Abraham and M'Cullagh!

S. alzoides, L.

33. FERMANAGH. Bar of Whealt [= Poulaphuca], '02, plentiful at waterfalls, 250–500 feet—Abraham and M'Cullagh!

***Sempervivum tectorum**, L.

33. FERMANAGH. Belleek, Drumclay, Bar of Whealt, '02—Abraham and M'Cullagh.

***Sedum reflexum**, L.

33. FERMANAGH. Bar of Whealt, '02, well established on houses—Abraham and M'Cullagh.

Myriophyllum spicatum, L.

7. TIPPERARY S. R. Suir at Clonmel and Carrick, '02—Phillips.

Callitricha stagnalis, Scop.

8. LIMERICK. Thornfields, '01—Miss Armitage.

Peplis Portula, L.

8. LIMERICK. Foynes, '02—Miss O'Brien!

33. FERMANAGH Castle Caidwell, '02—Abraham and M'Cullagh.

Chærophyllyum temulum, L.

33. FERMANAGH. Lisgoole abundant, '02—Abraham!

Scandix Pecten-Veneris, L.

23. WESTMEATH. Killucan district frequent, '02—Miss Reynell.

Genanthe fistulosa, L.

33. FERMANAGH. Mouth of Ulster Canal near Belturbet, '02—West!

Caucalis nodosa, Scop.

22. MEATH. Moynalty, '02—Barnes!

***Sambucus Ebulus**, L.

23. WESTMEATH. Glenanea, '89—Miss Reynell.

***Gaulium erectum*, Huds.**

8. LIMERICK. Foynes, '02—Miss O'Brien !

33. FERMANAGH. Enniskillen Model School, well established on a lawn not disturbed for 30 or 40 years—Abraham and M'Cullagh !

***Valerianella olitoria*, Pollich.**

23. WESTMEATH. Common about Killucan—Miss Reynell.

***Dipsacus sylvestris*, Huds.**

33. FERMANAGH. Lisgoole, '02, on an old ditch amid briars—Abraham and M'Cullagh.

***Filago germanica*, L.**

23. WESTMEATH. Archerstown—Miss Reynell.

***Gnaphalium uliginosum*, L.**

23. WESTMEATH. Killucan district frequent—Miss Reynell.

***G. sylvaticum*, L.**

22. MEATH. North of Moynalty abundant, '02—Barnes.

****Inula Helenum*, L.**

8. LIMERICK. Plentiful among willows near Foynes, '02—Miss O'Brien !

***Bidens cernua*, L.**

8. LIMERICK. Thornfields, '01—Miss Armitage. Mullagh, '02—Miss O'Brien !

***B. tripartita*, L.**

22. MEATH. Moynalty, '02—Barnes !

23. WESTMEATH. By R. Shannon near Athlone, '02—Phillips.

***Anthemis Cotula*, L.**

3. CORK WEST. Clear Island and Hare Island, '02—Phillips.

****Matricaria discoidea*, D.C.**

20. WICKLOW. Greystones, '02—Miss Hughes !

***Senecio sylvaticus*, L.**

23. WESTMEATH. Killucan, '02—Miss Reynell !

****Tanacetum vulgare*, L.**

10 TIPPERARY N. Near Borrisokane, '02—Phillips.

***Arctium minus*, Bernh.**

7. TIPPERARY S. Goold's Cross, '02—Phillips.

***Carduus pycnocephalus*, Jacq.**

30. CAVAN. Roadside at Aghaloory, '02—Barnes !

****Silybum Marianum*, Gærtn.**

8. LIMERICK. Foynes, '02 (Miss O'Brien)—Miss Knowles.

22. MEATH. Several places between Trim and Ballivor, '02—Barnes !

Centaurea Scabiosa*, L.**25. Roscommon. Moore, '97 (Mapother)—*Herb. S. & A. M.* !*C. Cyanus*, L.**

33. Fermanagh. Gubbaroo Point and Tamlaght, '02—Abraham and M'Cullagh.

****Cichorium Intybus*, L.**

23. WESTMEATH. Cornfield near Killucan—Miss Reynell.

†Crepis taraxacifolia, Thuill.

5. CORK EAST. †Railway at Midleton abundant, '01—Phillips.

Leontodon hispidus, L.

8. Limerick. Thornfields, '01—Miss Armitage.

9. CLARE. Sandhills at Lahinch, '01—Miss Armitage.

Arctostaphylos Uva-ursi, Spreng.

17. GALWAY N.E. Castle Lambert district plentiful, '02—Mrs.

Frank Joyce.

Vaccinium Oxycoccus, L.

33. FERMANAGH. Brookeboro' and near Garverry. '02—Abraham and M'Cullagh.

Erica cinerea, L.

17. Galway N.E. Abundant on limestone pavements in Castle Lambert district—Mrs. Frank Joyce.

23. WESTMEATH. Knock Eyon, '01—Miss Reynell.

Lysimachia vulgaris, L.

6. Waterford. Belle Lake on Dunmore Road, '02—Mrs. Gibbon!

22. MEATH. Moynalty, '02—Barnes!

Samolus Valerandi, L.

7. TIPPERARY S. Cashel, '02 (W. J. Hardy)—Miss Knowles.

†Symphytum officinale, L.

16. GALWAY W. †Barna, '01—Phillips.

Myosotis collina, Hoffm.

8. LIMERICK. Cahirmoyle, '02—Miss O'Brien!

M. versicolor, Reichb.

14. QUEEN'S CO. Abbeyleix, '01—Phillips.

23. WESTMEATH. Knock Drin (Levinge)—Miss Reynell.

Lithospermum officinale, L.

7. Tipperary S. Cashel, '02 (W. J. Hardy)—Miss Knowles.

8. Limerick. Foynes, '02—Miss O'Brien!

†Cuscuta Trifolii, Bab.

3. CORK WEST. Sherkin Island, '01-2 (J. J. Wolfe)—Phillips.

Solanum Dulcamara, L.

8. Limerick. Thornfields, '01—Miss Armitage.

23. WESTMEATH. †Reynella—Miss Reynell. †By R. Shannon at Athlone, '02—Phillips.

Verbascum Thapsus, L.

16. GALWAY W. Salthill, '02—Phillips.

28. SLIGO. Near Cloghervagh, '01 - Hon. Mrs. Wynne!

33. FERMANAGH. †Established on walls at Enniskillen, '02—Abraham and M'Cullagh.

Scrophularia aquatica, L.

33. FERMANAGH. Castle Caldwell, '02—Abraham and M'Cullagh!

Veronica polita, Fr.

23. WESTMEATH. Athlone, '02—Phillip.

V. montana, L.

8. LIMERICK. Foynes, '02—Miss O'Brien! Thornfields, '01—Miss Armitage.

***Veronica scutellata*, L.**

22. MEATH. Moynalty, '02—Barnes!

****V. peregrina*, L.**

23. FERMANAGH. Enniskillen abundant, '02—J. T. Abraham!

***Euphrasia Salzburgensis*, Funk.**

8. Limerick. Foynes, '02—Miss O'Brien!

***Lathraea squamaria*, L.**

33. Fermanagh. Glencunny wood, '02—Abraham and M'Cullagh!

***Pinguicula vulgaris*, L.**

6. WATERFORD. Near Boola Loughs, '02—Lett and Waddell.

Near Crotty's Lough "year after year"—J. E. Grubb. Both stations are on the Comeraghs.

***P. lusitanica*, L.**

33. FERMANAGH. Near Castle Caldwell, '02—Abraham and M'Cullagh.

#*Verbena officinalis*, L.

23. WESTMEATH. Raharney, '01—Miss Reynell.

#*Mentha rotundifolia*, Huds.

8. LIMERICK. Lisnagry, '01—Miss Armitage.

***Calamintha officinalis*, Moench.**

8. Limerick. Foynes, '02—Miss O'Brien!

***Origanum vulgare*, L.**

23. Westmeath. Roadside at Derry—Miss Reynell.

***Thymus Serpyllum*, L.**

23 WESTMEATH. Canal bank near Killucan, '00—Miss Reynell.

***Lamium amplexicaule*, L.**

II. KILKENNY. Near Kilkenny, '01—Phillips.

***L. intermedium*, Fr.**

6. WATERFORD. South of Clonmel, '01—Phillips.

***L. hybridum*, Vill.**

38. Down. In I.T.B. add "Not rare."

***Teucrium scorodonia*, L.**

23. WESTMEATH. Crooked Wood, '01—Miss Reynell.

****Plantago media*, L.**

8. LIMERICK. Foynes, '02—Miss O'Brien.

***Scleranthus annuus*, L.**

22. MEATH. Moynalty in fields, '02—Barnes!

36 TYRONE. Near L. Neagh, '59 (Hb. Steele)—Hb. S. & A. M.

****Chenopodium Bonus-Henricus*, L.**

33. FERMANAGH. Belleek, '02—Abraham and M'Cullagh!

***Polygonum lapathifolium*, L.**

12. WEXFORD. Enniscorthy, '02—Phillips.

****P. Bistorta*, L.**

29. LEITRIM. Lough Rynn plentiful, '02—Mrs. Clements.

33. Fermanagh. Castlecoole, '02—Abraham and M'Cullagh.

***Neottia Nidus-avis*, Rich**

10. TIPPERARY N. Near Cloughjordan, '01—Phillips.

15. GALWAY S.E. Kilcornan, '99—Mrs. Frank Joyce.

***Epipactis latifolia*, All.**

14. QUEEN'S CO. Near Carlow, '66 (F. Haughton)—*Herb. S. & A. M.!*
 29. LEITRIM. Lough Rynn, '02—Mrs. Clements!

***Orchis pyramidalis*, L.**

29. Leitrim. Lough Rynn, '02—Mrs. Clements!

***O. Morio*, L.**

28. SLIGO. Between Glencar and Sligo, '80 (F. W. Moore)—*Herb. S. & A. M.!*

***O. latifolia*, L.**

3. CORK WEST. Schull and Goleen, '01—Phillips.

***Ophrys apifera*, Huds.**

19. Kildare. Near Hill of Allen, and 6 miles west of Baltinglass,
 '02—Barnes.

***O. muscifera*, Huds.**

19. Kildare. Ballycullane bog, '85 (Chandlee)—*Herb. S. & A. M.!*

***Juncus obtusiflorus*, Ehrh.**

33. FERMANAGH. L. Keenaghan near Belleek—Hart, *Fl. Don.*

***Butomus umbellatus*, L.**

33. FERMANAGH. Belturbet, '02—West and Tetley. This is the
 Cavan record of *I.T.B.*, transferred to its proper county.

***Potamogeton heterophyllus*, Schreb.**

7. TIPPERARY S. Carrick-on-Suir, '02—Phillips.

8. Limerick. Shannon at Hermitage, '01—Miss Armitage.

***Cladium Mariscus*, R. Br.**

8. LIMERICK. Ringmoylan, '02—R. D. O'Brien and G. Fogerty!

33. Fermanagh. Between Blayney and Benmore, '02—Abraham
 and McCullagh.

***Rhynchospora fusca*, R. & S.**

8. LIMERICK. Castleconnell bog, '02—R. D. O'Brien and G.
 Fogerty!

***Carex diolca*, L.**

14. Queen's Co. Near Rathdowney, '01—Phillips.

***C. muricata*, L.**

11. KILKENNY. West of New Ross, '02—Phillips.

***C. strigosa*, Huds.**

25. ROSCOMMON. Kilteevan, '97 (Mapother)—*Herb. S. & A. M.!*

***C. leavigata*, Smith.**

8. Limerick. Ringmoylan, '02—R. D. O'Brien and G. Fogerty.

***Alopecurus pratensis*, L.**

33. FERMANAGH. Common in Enniskillen district, '02—Tetley.

***Phleum pratense*, L.**

6. WATERFORD. Cappoquin (T. Chandlee)—*Herb. S. & A. M.!*

11. KILKENNY. Kilkenny and Callan, '02—Phillips.

14. QUEEN'S CO. Durrow and Rathdowney, '02—Phillips.

16. GALWAY W. Barna, '01—Phillips.

17. GALWAY N.E. Near Menlo, '01—Phillips.

19. KILDARE. Lodge Park, '64—*Herb. S. & A. M.!*

***Agrostis alba*, L.**

14. QUEEN'S Co. Abbeyleix, '02—Phillips.

***A. canina*, L.**

17. GALWAY N.E. Near Menlo, '01—Phillips.

***Trisetum flavescens*, Beauv.**

16. GALWAY W. Near Salthill, '01—Phillips.

***Catabrosa aquatica*, Beauv.**

16. GALWAY W. Near Salthill, '01—Phillips.

***Melica uniflora*, Retz.**

10. TIPPERARY N. Near Roscrea, '01—Phillips.

***Glyceria aquatica*, Smith.**

8. LIMERICK. Cahirmoyle, '02—Miss O'Brien! Corbally, '02—R. D. O'Brien!

***Bromus erectus*, Huds.**

18. KING'S Co. Abundant on railway banks from Clara to Geashill, '02—Phillips.

***B. sterilis*, L.**

16. GALWAY W. Salthill, '02—Phillips.

†*Lolium temulentum*, L.

10. TIPPERARY N. †Borrisokane, '02—Phillips.

***Lepturus rigidus*, Trin.**

8. LIMERICK. Ringmoylan, '02—R. D. O'Brien and G. Fogerty!

***Blechnum spicant*, Roth.**

23. WESTMEATH. Knock Drin abundant, '01—Miss Reynell.

***Cryptogramme crispa*, R. Br.**38. Down. One clump in Hillsborough Park, '96—N. H. Foster!
[A puzzle. ? Introduced].***Asplenium marinum*, L.**

8. LIMERICK. Foynes, '02; formerly at Mount Trenchard—Miss O'Brien!

***Cystopteris fragilis*, Bernh.**

11. KILKENNY. Near Coppenagh Gap, '01—Phillips.

***Ophioglossum vulgatum*, L.**

6. WATERFORD. Ardmore and Tourin—R. J. Ussher!

***Botrychium Lunaria*, Swartz.**

33. Fermanagh. Five miles from Belcoo towards Garrison, '02—Abraham and M'Cullagh.

***Equisetum maximum*, Lamk.**

11. KILKENNY. Freshford, '02—P. H. Grierson!

The most important discussion of the year dealing with topographical botany has been Mr. Colgan's criticism of my paper "On Types of Distribution in the Irish Flora," which he kindly contributed, by my request, to the August number of the *Irish Naturalist*. I have read with interest, and pondered over his remarks and if I now briefly refer to some of the points which he raises, it will be with whatever degree of

judgment may come from viewing the case from a half year's perspective.

Mr. Colgan's criticism deals mainly with a discussion of the boundaries of the type areas, and the composition of the lists of type plants, but, as I shall show, his conception and definition of my "types" being different from my own, it naturally follows that my lists of species will not fall in with his ideas. As regards the boundaries of the Ultonian, Mumonian, Lagenian, and Connacian types, I give in my paper (p. 34) a sufficiently conspicuous diagram showing the lines which bound them, and say (pp. 33-34) "The central circle and these two intersecting lines, then, define six types of distribution which I believe are founded on the actual range of plants in the country. The names most conveniently employed for the "types" will be 2. Central, 3. Marginal, 4. Ultonian, 5. Mumonian, 6. Lagenian, 7. Connacian, the last four being named after the four provinces of Ireland, in which each type respectively reaches its maximum." The wide extension thus allowed to each type, and the reason for associating the names of the four provinces with the last four, are thus stated sufficiently clearly. But after heartily approving of these names as thus defined, Mr. Colgan proceeds to express his expectation that each of these four types should be more or less restricted to the province from which the type takes its name:—"We might fairly conclude from this passage [portion of the passage which I quote above] that the area of each type would be roughly co-extensive with the province whose name it bore." I do not see that in the face of my statement we might fairly conclude anything of the sort; on the contrary, I cannot but think that such a conclusion is not warranted by my definitions. I quote the above as an instance of a tendency to restriction of area and a seeking for hard and fast boundaries which form a dominant note throughout Mr. Colgan's remarks on the "types." The clue to this view of the question is I think given by my critic when he refers to the Introduction of the second edition of *Cybele Hibernica* for lists of the northern, southern, eastern, and western plants of Ireland. Here, under the head of "Topographical Groups" we find lists compiled by the simple process of drawing a line across the map—along a parallel of latitude or longitude, a halfway between two—and listing all plants which occur *only*

on one side of it. Against the inexorable line there is no appeal. Be there a thousand plants of a species on the one hand, they are of no avail if there be one on the other. What are we to say of a list of "Western Plants" of Ireland (*Cybele*, p. lv.) in which *Saxifraga umbrosa*, *Euphorbia hiberna*, *Trichomanes radicans*, find no place?

My "types" have been formed according to a quite different principle. The distribution of species is infinitely varied. If we have 1,200 flowering plants in Ireland, then there are just 1,200 types of distribution. Mapped, the lines defining their range of occurrence and of frequency would appear as a complicated series of curves intersecting in every direction. The task to which I devoted six months, with what little success others must judge, was to discover by means of a study of the mapped range of each member of our flora the lines along which the most marked coincidences of such curves were to be found. These are the true phytological boundaries. The various "strong lines" thus appearing, had finally to be grouped into one or two simple curves, to represent the dominant floral boundary lines. Needless to say, these lines do not fit in with any parallels of latitude, or political provinces, or other artificial boundaries; but by an allowable generalization they may be shown as one or two simple and easily remembered lines or curves. Thus, instead of making the plants fit a prescribed boundary, it has been my aim to make the boundary fit the plants.

The same synthetic process may lead to a wide overlap between species of different types—another point of which Mr. Colgan falls foul. I may observe in passing that in the general conception of natural plant-groups, their boundaries, and overlaps, I have, as I stated in my paper, endeavoured to follow in the footsteps of our greatest botanical geographer, Hewett Cottrell Watson. Watson, indeed, omits (perhaps wisely) to lay down any bounding limit whatever for his British types; "Plants chiefly seen in West England" is a far vaguer type definition than mine, which my reviewer thinks are not definite enough. Then, as to overlap, we may find plants of Watson's English type far up in the Highlands, and "Scottish" plants on the shores of the English Channel. "Atlantic" species occur on the east

coast, and even "Germanic" plants—the most restricted type of all—may be seen in western counties. Possibly Mr. Colgan looks with marked disfavour on so broad a classification of our plants—but for myself, if I sin, I am well content to sin in so good company. If the broad view for which I have contended be applied to the lists of species set down under each of my types of distribution, and to Mr. Colgan's revision of them, I do not fear that my conclusions will be seriously imperilled.

So much for the general theory of the grouping of the flora under types, and its application. Another important and highly controversial question on which Mr. Colgan touches is the origin and history of our flora, where he attributes "oversight" and "confusion of thought" to my remarks on the Glacial epoch and its passing away in relation to the flora. On referring to the passage, I cannot detect any such features; but if there be, I fancy that, at least, I am not alone in these respects. My critic announces—with a confidence that geologists will envy—that the ground "at the close of the Glacial period was quite naked, a veritable *tabula rasa* from the botanical point of view." But in *Introduction to Cybele Hibernica*, p. xliv., the same writer states, with much reason, "we are hardly justified in supposing the glaciation of Ireland to have completely denuded the country of its plant population," and goes on to suggest the present condition and flora of Greenland as fairly representing what obtained in Ireland during the Glacial period. Now, the present flora of Greenland numbers, according to the latest authority¹, 386 species of flowering plants—a curious kind of botanical *tabula rasa*! I agree with Mr. Colgan in his earlier, not his later view, and it was to such a vegetation that I referred when I spoke of a "presumably weaker flora which was in possession of the ground" which is the statement which Mr. Colgan describes as an oversight. To judge from my critic's objection to my phrase "successive waves of plant migration," it would appear that his conception is that the Glacial period left the land absolutely bare, and, hey presto! our present flora took possession

¹ Warming: Ueber Grönland's Vegetation. *Engler's Bot. Jahrb.* x., 364 et seq.

of it. Can we not conceive the barren dreary wastes left by the ice, the gradual amelioration of the climate, the slow spreading of plant life, the tardy formation of soil, the gradual incoming of plant-group after plant-group, extending over thousands of years, and the extinction of previous occupiers, as changing conditions by degrees approached the present order of things? Bennie's interesting papers on Scottish glacial botany, and Clement Reid's writings, give vivid sketches of scenes in this long drama. I fancy that the phrase at which Mr. Colgan takes umbrage well expresses the facts of the case.

Lastly, as to Mr. Colgan's "butterfly"—the simile of a plant-army, of which the rear-guard are made to walk across ground considerably left ready for them by their predecessors. It appears that I was wrong in taking this passage seriously. The little butterfly might have been left to pursue its innocent flight. I drew attention to the simile because it appeared to me to convey a misconception of an important principle of plant migration. I am not an adept in the Lepidoptera, but am aware that certain species are far from harmless. Mr. Colgan's "butterfly" appeared to my non-entomological eye to be one of these, which, if left undisturbed, might work havoc in the fair garment of our scientific conceptions. It would be a pity to sacrifice correctness even for a pretty simile—or *semele!* I trust my little dose of camphor was not amiss.

National Library, Dublin.

NEWS GLEANINGS.

Congratulations.

Our congratulations to Dr. Scharff on his election to the Presidency of the Conchological Society of Great Britain and Ireland.

Also to H. J. Seymour, ex-secretary of the Dublin Field Club, on being appointed an Examiner in Geology in the Royal University of Ireland.

Also to our contributor, Dr. C. F. D'Arcy on his election to the Bishopric of Clogher.



RED-NECKED PHALAROPE (*Phalaropus hyperboreus*)

Male, Female, and Young
West of Ireland.

Photo, by Dr. C. I. Patten.

[To face page 41.

BREEDING OF THE RED-NECKED PHALAROPE IN IRELAND.

BY EDWARD WILLIAMS.

[PLATE I.]

THE Red-necked Phalarope (*Phalaropus hyperboreus*) was unknown as an Irish bird till the year 1891, when, during the month of November, a great gale occurred and a quantity of Forktailed Petrels and Common Phalaropes were blown inland. Among the specimens I received were a Wilson's Petrel and a Red-necked Phalarope, both new to Ireland. The Phalarope was in full winter plumage, and was shot by Mr. J. A. Haire at Loughgilly, Co. Armagh. This specimen is now in the National Museum.

Nothing more was heard of this species till May, 1902, when I received a beautiful specimen in full summer plumage from Mr. J. A. Sheridan; the exact locality where he obtained the bird I have been unable to ascertain. It had a curiously malformed beak, turned up at the end like a miniature Avocet, and it showed in a very marked degree the beautiful bay colour on the neck, from which the bird derives its name.

Before giving an account of the discovery of this bird as a breeding species in Ireland, I may say that, seeing the sad havoc that has occurred to the species in the Orkneys and Shetland by egg collectors and others, I have resolved, in consultation with a few leading Irish ornithologists, not to divulge the exact locality of the breeding ground, but to say in a general way "the West of Ireland." I am also glad to say that the gentleman on whose property this very interesting discovery has been made shows every disposition to have the birds rigidly protected.

Early in the month of July last this gentleman sent me the skin of a Phalarope which had been rather roughly handled, but thinking that he had been on a yachting cruise round Scotland, and had probably obtained a specimen, it did not interest me much. In acknowledging the receipt I just said, "Of course the bird is not Irish." Judge of my surprise when

I received the following letter :—"The Red-necked Phalarope which I sent you was, of course, Irish, otherwise I would not have sent it to you. I now send two others shot to-day within a mile of the house. The birds breed here, and have, according to my keeper, done so for many years; he has also frequently found their nests, and on my questioning him he gave me a correct description of their eggs, colour, &c., &c. You will kindly set them up and give them on loan to the Natural History Museum" (where they now are).

In my reply I said that ornithologists would scarcely credit such a thing that this, a polar-breeding species, should be found breeding so far south, and begged him to set matters beyond all doubt by obtaining either an egg or young bird in the down. To my great delight, on 1st of August, I received a baby Phalarope, with a note, in which my correspondent said :—

"I am sorry to have to send you an uncontrovertible proof of the Red-necked Phalarope's nesting here. This is one of their chicks—I saw one other. The distress of the two old birds made it very hard to kill this little thing. During my tramp through the bog I counted seventeen, but there may have been many more; the most of the birds I saw were females. The tameness of these is very marked, as apparently unconcernedly they are seeking food within a distance of a few feet. It is my greatest desire that these birds should be perfectly protected and unmolested. I am surprised that these little chicks are able to survive their many enemies, especially as there are always a lot of Black-backed and other gulls on the bog."

The chick weighed 96 grains; plumage like a downy Dunlin, but down much more golden yellow about head and neck, shading into white on lower parts; two well marked white stripes on a black surface down middle of back. Feet inside flesh colour, outer parts dark, toes black, beak dark flesh.

The male bird, which is much more obscure in the colour, had two very large hatching spots on the breast, showing that he assists in the duty of incubation; he is smaller than the female, and weighed 589 grains. The female bird, strange to say, was assuming the winter plumage so early as the 14th July, and weighed 691 grains.

It may be here desirable to mention the chief differences existing between this bird and the much more common species, the Grey Phalarope (*Phalarocetes fulicarius*) which occurs, I may say, annually on migration during the months of September and October. Both have the curious lobe-like appendages, similar to the Bald Coot, which distinguishes them from all other waders.

P. fulicarius is a good deal the larger of the two, measuring—length, 8·25 in.; wing, 4·9 in., whilst *P. hyperboreus* measures—length, 7·5 in.; wing, 4·4 in.

In their winter plumage the birds resemble one another, being a uniform bluish grey on the back, forehead, breast; down to the tail pure white. In summer they widely differ, the neck, breast, and lower parts in *P. fulicarius* being a brilliant chestnut red, back black, with a rufous margin to the feathers. *P. hyperboreus* in summer has the head, hind neck, and shoulders ash grey, back and wings rather darker, sides and front of the neck chestnut, upper breast grey, under parts white. Young birds of both species resemble one another in autumn, having the feathers margined with pale rufous. The feet are much less lobed than in the adult.

The following notes describing the breeding range and habits of this bird are from Mr. Howard Saunders' "Manual," and Yarrell's "British Birds," vol. iii. p. 316.

The Red-necked Phalarope breeds plentifully in the south of Greenland, Iceland, the Faroes, and above the forest growth on the Dofrefield in Scandinavia, as well as in the north; Nova Zembla, Siberia up to lat. 73°, as far east as Kamtschatka, and on the high ground by the Sea of Ochotsk. In Alaska, and through the Arctic regions of America, it is very abundant, and there again it nests by some of the lakes in the mountain ranges, as well as on the flat coast; while in winter, or on passage, it has been found down to the Bermudas and Guatemala. In the Old World its migrations extend to the Indo-Malayan region, its line through Central Asia crossing the Pamir range. Unlike its congener, it avails itself of the route by the valley of the Volga, especially in spring. It visits the Black Sea district and some of the inland waters of central Europe, and it occurs irregularly on both sides of the Mediterranean basin, though rare to the west of Italy. It is seldom found in the

west and north of France, Holland, or Germany ; but towards the north-east end of the Baltic it is not uncommon on the autumn passage, when it also visits the Swiss lakes.

The late J. W. Salmon, who visited Orkney in the summer of 1831, says of the Red-necked Phalarope :—" This beautiful little bird appeared to be very tame ; although we shot two pairs, those that were swimming about did not take the least notice of the report of the gun ; and they seemed to be much attached to each other, for when one of them flew to a short distance the other immediately followed, and while I held a female that was wounded in my hand its mate came and fluttered before my face. We were much gratified in watching the motions of these as they kept swimming about, and were for ever dipping their bills into the water ; and so intent were they upon their occupation, that they did not take the least notice of us although within a few yards of them.

" After some little difficulty we were fortunate in finding their nests, which were placed in small tufts of grass growing close to the edge of the lock ; they were formed of dried grass ; and were about the size of a titlark but much deeper. The eggs are considerably smaller than those of the Dunlin, and beautifully spotted all over with brown. They had but just commenced laying, June 13, as we found only from one to two eggs in each nest ; but we were informed by a boy whom we engaged in our service that they always lay four, and are called by the name of half-web."

In the Hebrides they usually arrive in the latter part of May, and by August both old and young have taken their departure.

The late W. Proctor contributes the following experiences obtained in Iceland :—The young birds leave the nest as soon as hatched. On the approach of danger the old bird runs among the aquatic herbage, spreading her wings and counterfeiting lameness for the purpose of deluding the intruder ; and after leading the enemy from her young she takes flight and flies to a great height, at the same time displaying a peculiar action of the wings ; then descending with great velocity, and making simultaneously a noise with her wings. On her return to her young she uses a particular cry for the purpose of gathering the young together. As soon as she has collected them she covers them with her wings like the domestic hen.

In conclusion, I would like to pay a tribute to the keen ornithological foresight of my friend the late A. G. More (whose loss to our favourite science we so much deplore) who, alluding to this species, uses, in his List of Irish Birds, these remarkable words:—"The Red-necked Phalarope, which breeds in several parts of the west of Scotland, has not yet been found in Ireland, though it might well be expected to occur." Viewed in the light of this recent discovery, do not the words seem almost prophetic?

Dublin.

REVIEW.

BRITISH LIVERWORTS.

A List, with descriptive notes, of all the species of Hepaticæ hitherto found in the British Islands. By HENRY WILLIAM LETT, M.A., M.R.I.A., Rector of Aghaderg, Co. Down. Pp. x + 200. 1902. Printed for the author. 7s. 6d.

Canon Lett, well known as an Irish bryologist, has given us a little book that will be useful to all students of the Liverworts. The author tells us that his essay is an expansion of notes made for his own use.

The work is in reality a handbook, with full descriptions of species, well printed, followed by notes on habitat, distribution, and affinities, in smaller type. While following in general the style adopted in most books of the kind, a number of minor departures are noticeable, none of which we look on as improvements. The names of the plants are frequently separated from the authority by a full stop. The contractions employed in the references which follow the names are often awkward. The order in which the genera are arranged does not appear to follow any standard work. *Nardia revoluta* is included in the list on account of the Wicklow record, which rests on doubtful authority. The interesting Irish variety *leptodesma* of *Pallavicinia hibernica* is not referred to.

In giving a brief indication of the distribution of each species, Canon Lett uses the eighteen provinces of Watson for Great Britain, and for Ireland the counties arranged alphabetically. Why Ireland is thus favoured with a much more minute subdivision than Great Britain as a work intended for all British students is not clear; the employment of the twelve districts of *Cybele Hibernica* would have given a more uniform scale for comparison, as well as a corresponding passage from south to north. The abbreviations used for the Irish counties are confusing.

Canon Lett's "List" will serve a very useful purpose in providing the bryologist with a portable handbook, and we cordially congratulate the author on its production.

R. LL. P.

IRISH ACULEATE HYMENOPTERA.

BY H. K. GORE CUTHBERT.

IN a note on Col. Verbury's Kerry list of aculeate Hymenoptera¹ I find it stated that "a comparison of this list with the recorded Irish species shows that no fewer than twelve were previously unknown to occur in Ireland." Among the twelve is *Crabro iv-maculatus*, recorded by P. E. Freke from Courtown.² The specific name *geniculatus* was given by Shuckard to the species properly known now as the *iv-maculatus* of Dahlbom. The term "var. *geniculatus*" is applied by modern authors to the dark form, recognised by Freke in above reference.

Another of Col. Verbury's insects, *Bombus jonellus*, was recorded by me³ from Rosscarbery as *B. schrimshiranus*, the synonym for *jonellus* most used in the British lists. This species is also upon Freke's list. The other ten species as such have been unrecorded. Most of them are very distinct and conspicuous, but two or three are so closely allied to common insects, from which they can only be separated by obscure anatomical differences in the male sex, that it is probable they have been assigned in error in our list to their allied species. It may be useful to bring together here all the additions to the Irish list of aculeate Hymenoptera since 1897.⁴

Pomphilus unguicularis, Thoms.—Kerry (Verbury).

P. pectinipes, V. de L.—Sneem, Co. Kerry (Cuthbert)

Crabro cetratus, Shuck.—Kerry (Verbury).

C. chrysostomus, Lep.—Kerry (Verbury).

Odynerus trifasciatus, Oliv.—Kerry (Verbury).

Prosopis hyalinata, Smith.—Quaker Island, Lough Ree (Dillon).

Colletes montanus, Mor.—Kerry (Yerbury).

Andrena fuscipes, Kirb.—Kerry (Yerbury).

A. labialis, Kirb.—Kenmare, Co. Kerry (Cuthbert).

A. Cetili, Schr.—Kerry (Yerbury).

A. humilis, Imh.—Kerry (Yerbury).

Nomada roberjeotiana, Panz.—Kerry (Yerbury).

Celloxyx vectis, Curt.—Swords, Co. Dublin (Cuthbert).

Megachile willughbiella, Kirb.—Kerry (Yerbury).

On July 27th last, I captured, in a gravel pit at Lucan, two examples of *Nomada furva*, Panz., recorded by Haliday, but not taken in Ireland since his time.

The Irish list now contains 148 species in 32 genera.

¹ *Irish Nat.*, vol. xi., 1902, p. 186. ² *Ib.*, vol. v., p. 41. ³ *Ib.*, vol. iv., p. 305. ⁴ *Ib.*, vol. vi., p. 324.

A PROPOSED MARINE LABORATORY FOR ULSTER.

BY PROFESSOR GREGG WILSON, D.S.C.

As was mentioned in the *Irish Naturalist* for January, it is proposed to establish a marine laboratory somewhere on the coast of Ulster. There seems to be a widespread feeling in Belfast and the neighbourhood that the study of the fauna and flora of the northern parts of the Irish coast has been too much neglected of late, and what is equally important, there seems to be a desire on the part of many of the field-naturalists of Belfast to turn to, and do some good work at the "harvest of the sea." A considerable number of the members of the Belfast Natural History and Philosophical Society and of the Belfast Naturalists' Field Club are enthusiastically supporting the establishment of the proposed marine laboratory. It would appear that a very natural ambition has arisen to fill some of the gaps in the fauna and flora lists of the admirable recent British Association *Guide to Belfast*.

Besides those who regard the proposal merely from the point of view of the naturalist, there are, however, not a few who look to the suggested station as likely to be of importance in connection with the fisheries of Ireland. In almost every civilised country that has fisheries worth caring for, efforts are being made to obtain a thorough knowledge of the numbers, distribution, habits, and life-histories of the fishes, molluscs, crustaceans, and other forms that are used for food or as bait. Even the organisms that are consumed by the food-fishes are studied as being of importance—e.g., in determining to some extent the movements of the fishes. Moreover, the enemies of the fishes, and of animals used as bait, and of the food of fishes are no less regarded as worthy of attention. This being so, it appears to many that similar work should be carried on to a greater extent than it is at present in Ireland. Undoubtedly, Mr. Holt and his assistants are doing good work; but it is chiefly in the South and West, and

Ulster needs to be attended to as well. Its fisheries require to be developed, and very likely in course of time they will have to be saved from overfishing. They should certainly be carefully watched.

The fish of any district require local study. The size of maturity in the Plaice, for instance, is very different in the English Channel from what it is in the North Sea. Similarly, there are marked differences in the times of spawning of fish, crabs, &c., at different parts of the British coasts. Such differences become of great importance whenever there is any talk of restrictive legislation ; when, for example, it is proposed to have a size-limit or a close-time.

Knowledge that is less directly useful, however, is also of interest to the student of fisheries, and the Belfast naturalists could do valuable work, even if they never tackled any of the greater fishery problems. The task of identifying the contents of the tow-net and dredge is still a difficult one, and in particular the identification of larval forms may be mentioned as likely to furnish material for many students. The purely economic zoologist will be grateful for any help in this direction. He must learn to know what he is handling, whether it be of direct use to man or not.

The first definite step towards the formation of the new Biological Society was taken in December, when the Council of the Belfast Natural History and Philosophical Society called a meeting of delegates from itself, the Queen's College, and the Belfast Naturalists' Field Club to consider the subject. The delegates heartily approved of the inauguration of an Association for the study of the fauna and flora of our seas and fresh-water loughs ; and committees are now at work arranging to give effect to this scheme.

Probably the new Association will from the first not confine its labours to salt-water forms, but will devote a considerable amount of attention to the fresh-water loughs of Ulster. Lough Neagh and several other of the larger sheets of water in the district present an attractive field for investigation. Both the pure naturalist and the student of economics will find much work to be done in these waters. The habits of the Pollan and the Eel are little known, and

these fish are of special interest because they yield a revenue of a good many thousand pounds a year. The movements of the forms on which these fish feed, their reaction to seasonal changes, and their whole history ought to be carefully inquired into.

It is obvious that, however willing the naturalists of Belfast may be, the majority of them will only be able to devote an occasional day to collecting material for study, and accordingly the Association will aim at having a trained naturalist and a boatman constantly employed in obtaining and sorting out plants and animals for the workers. The Honorary Director will have charge of the apportionment of the spoil to the various members and others, and reports will, from time to time, be issued, with results. It is not proposed to oppose in any way the existing scientific Societies of Belfast; but, on the contrary, it is expected that these Societies will serve as agents for publishing many of the finds of the new Association.

The one difficulty in the way of starting work is the need of funds. It is estimated that to carry on the work, even on the moderate scale proposed, would involve an outlay of about £300 a year, as well as a considerable initial expenditure, and it is too much to expect the workers of the Association to provide such a large amount. In view of the probable utility of the work to be done, it is thought that public-spirited men, and even the Department of Agriculture—which has done so much already for the fisheries and other industries—may come to the help of the Association. A few gentlemen have already come forward to give the scheme a start, and what is now wanted to ensure a fair chance of good work being done, is a subsidy from the Department of Agriculture, or a number of promises of annual contributions from private well-wishers.

Queen's College, Belfast.

February,

IRISH SOCIETIES.

IRISH FIELD CLUB UNION.

We are requested to publish the following statement, which has been transmitted to the four Clubs constituting the Field Club Union :—

DIGEST, 1902.

The work done during the year has consisted of an exchange of lecturers between the Clubs more full than for some years past. Belfast sent a lecturer to Dublin and Cork; Dublin to Belfast and Limerick; and Cork to Limerick.

The Committee met in Dublin on November 4th, all Clubs except Limerick being represented. It was then decided to issue a full statement of the aims, constitution, and work of the Union. This has been prepared by the Secretary, and is now ready for transmission.

ACCOUNTS, 1902.

RECEIPTS.	EXPENSES.
	£ s. d.
To Balance, 1901, .	6 10 1
Affiliation Fees—	
I.F.C., 1901, .	1 1 2
C.N.F.C., 1901, .	0 9 0
B.N.F.C., 1900-1 and 1901-2, .	4 4 0
I.F.C., 1902, .	0 19 8
D.N.F.C., 1901, .	1 5 4
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	£14 9 3
	W. H. Phillips, attending I.F.C.U. Committee, .
	0 9 5
	Robt. Patterson, do. .
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	T. Farrington, do. .
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	W. H. Phillips, Lectures in Dublin and Cork, .
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	J. L. Copeman, Lecture in Limerick, .
	1 9 6
	R. J. Ussher, Lecture in Belfast, .
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	G. H. Carpenter, Lecture in Limerick, .
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Dublin, January, 1903.

R. LLOYD PRAEGER, Hon. Sec.

BELFAST NATURAL HISTORY AND PHILOSOPHICAL SOCIETY.

DECEMBER 17.—ROBERT YOUNG, J.P., in the chair. R. J. USHER read a paper entitled "Evidence of the Caves" before a large audience. He described the deposits of stalagmite, clay, &c., found in caves, and the important evidence they yield of the past history of the fauna of the country, including primitive man. The explorations carried out in certain well-known caves, such as Kent's Cavern, were described in detail, and special attention was directed to Shandon Cave and Ballynamitra Cave, in Ireland, the deposits of which, and the interesting remains which they yielded, being fully described. Turning to the work recently carried by the Irish Cave Committee under the chairmanship of Dr. Scharff, the caves of Keishcorran were referred to, and an account given of the digging carried out there in 1901 under the superintendence of the speaker. These researches added a new animal, the Arctic Lemming, to the Irish fauna, and proved the abundance of the Bear in old days. A vote of thanks was passed on the motion of John M. Dickson, seconded by Prof. Symington.

JANUARY 6.—JOHN M. MACCORMAC, M.D., read a paper on "Hereditv in its relation to the Nervous System."

BELFAST NATURALISTS' FIELD CLUB.

DECEMBER 16.—The President, F. J. BIGGER, in the chair. R. J. USHER lectured on "Birds and their Breeding Habits." The position of nests and its relation to the colour of eggs was dealt with, and the variation in number, size, and shape of eggs was discussed. The peculiar behaviour of nesting birds and of their young was alluded to, and the relation existing between the date of nesting and external conditions, such as food supply, was emphasized. Nests are built in very different positions, such as roofs and chimneys, trees, herbage, holes and burrows, shingle, moors, marshes, cliffs, and sea-caves. The various kinds of nests which birds build include swinging nests, domed nests, fortified nests, adapted nests, floating nests; while many birds build no nest at all. The well-known parasitism of the Cuckoo was referred to.

A number of slides illustrating the life of the young Cuckoo were shown by ROBERT PATTERSON at the conclusion of the lecture, which was illustrated by a very fine series of slides, mostly by Robert Welch.

A vote of thanks was passed on the motion of WILLIAM GRAY. The PRESIDENT referred to the advantages of the Field Club Union, which aided in the securing for the Club of such a lecturer as Mr. Ussher.

BOTANICAL SECTION.—DECEMBER 19.—The study of our native ferns was continued. Mr. H. C. MARSHALL read an interesting and instructive paper on "Fern Propagation and Growth," and afterwards described a number of species, principally of the North-east district. The next meeting of the Section was announced to be held on Friday evening, 16th January.

ROYAL ZOOLOGICAL SOCIETY.

Recent gifts include a Grey-lag Goose from Mr. R. M. Barrington, a pair of Sheldrake from Capt. Boxer, a Peacock from Lady Inglis, a Leopard from the Zoological Society of London, a Monkey from Lady M'Calmont, and a Lemur from Mrs. Skimin.

DUBLIN NATURALISTS' FIELD CLUB.

DECEMBER 6.—WINTER EXCURSION.—The first of the winter excursions which the Committee are experimentally carrying out took place. The weather was favourable—cold, but dry. A party of nineteen assembled at Terenure, at 1.30, and entered the grounds of Bushy Park (by kind permission of Sir Frederick Shaw, Bart.). D. Houston, who acted as conductor, demonstrated in botany, and G. H. Carpenter in zoology. Much of interest was seen. Among the subjects studied were climbing plants (*Clematis*, *Vicia*, *Hedera*, *Rubus*), dispersal of fruit (*Clematis*, *Crataegus*, *Geranium*, *Galium*, *Fraxinus*), galls (on *Quercus*, *Fraxinus*), rooting of tips of Bramble shoots, and shoots arising from roots (*Crataegus*). Brown withered patches occurring on the centre of Holly leaves were found by Mr. Carpenter to be caused by the maggot of the minute two-winged fly, *Chromatomyia ilicis* Curt. R. Ll. Praeger pointed out fine examples of river terraces along the Dodder. An enjoyable and instructive afternoon was spent, and the party subsequently had tea with Mrs. Praeger.

DECEMBER 8.—Prof. Colx in the chair. Thirty-two members and visitors were present. The Hon. Secretary read out the names of those proposed by the Committee as the Officers and Committee for 1903, as follows:—**PRESIDENT**—W. F. de V. Kane; **VICE-PRESIDENT**—F. W. Burbidge; **HON. SECS.**—G. H. Pethybridge and J. de Witt Hinch; **HON. TREAS.**—H. K. G. Cuthbert; **COMMITTEE**—Miss Knowles, Miss M'Intosh, Miss Mahaffy, Miss Massy, G. H. Carpenter, W. F. Gunn, J. N. Halbert, D. Houston, D. M'Ardle, R. Ll. Praeger, H. J. Seymour, and W. B. Wright.

W. H. PHILLIPS (Field Club Union Lecturer from the Belfast Naturalists' Field Club), then read a paper entitled "A Gossip about British Ferns." The paper was illustrated by numerous prints of ferns, and also by fresh fronds. G. H. PETHYBRIDGE, D. HOUSTON, R. LL. PRAEGER and F. O'B. ELLISON discussed the paper.

An informal account was then given by D. HOUSTON, G. H. PETHYBRIDGE, and R. LL. PRAEGER of the winter excursion held on the previous Saturday, with demonstrations on the specimens collected.

Mr. J. Adams, B.A., was elected a member of the Club.

CORK NATURALISTS' FIELD CLUB.

DECEMBER 9.—W. H. PHILLIPS, who came from the Belfast Club under the Field Club Union lecture exchange scheme, read a paper entitled "A Gossip about British Ferns." The paper was illustrated with a fine series of nature prints and fresh fronds.

N O T E S .

ZOOLOGY.

Tidal Fringes.

While walking on the sea-shore, and especially on a strand, one may sometimes see, usually at high-water mark, a fringe of marine debris, largely composed of sea-weed with a few species of shells. This is generally the result of stormy weather, and experienced workers know that such debris yields, now and then, prizes when least expected. There is another class of tidal fringe, however, found along our strands, to which I desire to call attention ; a fringe formed usually of one species, which comes in at the edge of a quiet sea, generally in summer or early autumn. The first of these I remember noticing was a very narrow line of the snow-white *Miliolina secans*, a porcellanous member of the Foraminifera, that stretched all the way from Portrush to the White Rocks. This is common on some shores mixed with other species; here it was by itself. Mr. J. Wright, to whom I brought some of this fringe, tells me that Messrs. Stewart and Swanston found *Truncatulina lobatula* under similar circumstances on a strand of the Dingle promontory. On this same strand at Portrush, also on a quiet September day, I found the exquisite spiral shell of *Spirula Peronii* dotting the tide mark here and there for over a mile. The majority were much broken, but I obtained eight or ten nice specimens. I have noticed shells of this little tropical¹ Cephalopod on several other occasions at both Portrush and Portstewart, but never saw the animal. At the latter strand I have noted the Cowrie, *Trivia europea*, coming in plentifully along the margin of a quiet tide, but in nothing like the quantity which Mr. Frank Bigger and myself once found as a thick tide-fringe on Ocean Strand near Portsalon. We brought away several thousands of the finest specimens. This is the best locality I know in Ireland for this pretty shell; for Messrs. Darbshire and Standen found it there in even larger quantities. *Hydrobia ulva* occasionally occurs as a fringe at the mouth of the Boyne, and in Belfast Lough. The violet pelagic shell, *Ianthina rotundata*, is carefully watched for on the north coast each summer and autumn. It sometimes sparingly fringes high-water-mark along Bush Bay and Ballycastle strand, and I have watched it coming in alive with its float on Finner Strand, Bundoran, during a westerly gale. On Boxing-day, 1901, along the Inner Bay of Dundrum, there was a thick fringe, in some places over an inch deep, of young specimens of the common crab *Carcinas manas*. The tide recedes far at this southern end, and it is possible a sharp frost while tide was out may have caused the death of these myriads, which the incoming tide quietly floated up later to high-water mark. The Banded Wedge-shell, *Donax vittatus*, a common bivalve

¹ Native habitats—West Indies, S.E. Asia, Australia.

on many strands, mixed with some other species, I have seen as a separate fringe at Magilligan and Portstewart, and *Actaeon tornatilis* at Castlerock. In May last I noticed a matted fringe of the delicate spines of the Heart Urchin, *Echinocardium cordatum*, with a few small bivalves on Trabeg, Rosapenna, and Mr. Standen informs me that he noticed the same at Portsalon Strand in May, 1893. The commoner species mentioned may be found almost anywhere round our coasts, but it is only in special stations, I think, one finds them selected out like this in large numbers. Perhaps some other readers of this Journal can add something to this list.

R. WELCH.

Belfast.

Succinea oblonga near Mallow.

On the 2nd of October last, I found a specimen of this rare shell in a field close to Mallow railway station. It was near the root on an Iris (*I. Pseud-acorus*) that was growing in some inches of water. I pulled it up when in search of Pisidia. It is of the southern form of Cork and Kerry, rather than of the long narrow form found so plentifully in Lough Erne in recent years. I sent the shell to Mr. R. Welch, of Belfast, for identification.

P. H. GRIERSON.

Clondalkin.

Cæcilianella acicula in Co. Waterford.

I was much interested in reading Miss Massy's note in the December issue of *Irish Naturalist* on *Cæcilianella acicula* in Co. Dublin. On November 28th, 1902, I took seven specimens, two living, the rest empty shells, about four miles from Cappoquin, near the Waterford road. They were close to the surface under small stones in a dry situation, where the formation was Lower Limestone of the Carboniferous series.

P. H. GRIERSON.

Clondalkin.

Short Sunfish in the Moy Estuary.

On the 29th of October when passing Goose Island in my shooting punt, I observed a large specimen of the Short Sunfish (*Orthagoriscus mola*) lying dead on the shore of the Island. It was a large specimen, over five feet in length, and was the first I ever knew visiting the estuary, though they are not at all uncommon in the open bay near Kilcummin Head during summer, where my friend, the late W. Litter, used frequently take them as they rolled along near the surface of the water, their dorsal fins betraying them as they appeared over the water.

ROBERT WARREN.

Moy View, Ballina.

The Harvey Collection of Irish Birds.

When at the Cork Exhibition last October, I took advantage of the opportunity of visiting the Queen's College, for I was anxious to inspect the fine collection of native birds presented to that Institution, by the late Dr. J. R. Harvey, when leaving Cork to reside with his son in Dublin. At the time of my visit the gentleman in charge of the collection was absent, but one of the under officials very civilly obtained the keys and opened the cases for me to examine some rare specimens that I had the pleasure (many years ago) of presenting to my old and valued friend.

My first view was very disappointing, from the neglected appearance of the collection, and I was grieved to see the careless manner in which the specimens were crowded and huddled together without any attempt at arrangement, so that it was difficult to find any particular specimen wanted. Especially some of the rare ones, which were partly hidden—in some instances quite so, behind the common ones, instead of being placed in the front of the cases, within view of the observer. For instance, I was a long time trying to find a specimen of the Spotted Redshank (only the *second* known to have been obtained in Ireland), and at last found it behind a Common Redshank, and other waders. Then, again, when looking for a specimen of the Iceland Gull (only the fourth known to Mr. Thompson as being shot in Ireland), I found it hidden in a corner of the case behind its dust-covered companions, Blackbacked, Herring, and Common Gulls. This state of things surprised me, for I was under the impression that, where there was a Cork Naturalists' Field Club, whose meetings you so fully report from time to time in the *Irish Naturalist*, some interest would have been taken in this (which at one time was the finest collection of native birds in the South of Ireland) if not for the love of the science, at least for respect of the memory of the generous donor, who, among Irish naturalists, ranked *second only* to Wm. Thompson. As far as I could judge from the appearance of the specimens, no attempts have been made of late years to add to the collection, and as I have no doubt that when Dr. Harvey made the presentation, it was with the intention that the collection should form the nucleus of a larger one, that ultimately would be part of a public museum, to further the study of natural history. However, this does not seem to be the view of either the College authorities, or of the Field Club.

ROBERT WARREN.

Moy View, Ballina.

Animal remains from the Gobbins Caves, Co. Antrim.

No one who has been fortunate enough to visit the wonderful Gobbins cliffs and caves near Belfast can help being interested in the animal remains which have been brought to light there. A cliff path—one of the greatest sights in the North of Ireland—is being constructed along the base of the fine basalt precipices under the able superintendence of Mr. Wise. During the progress of the work caves were discovered in which large quantities of bones were found. My attention was first drawn to them by Mr. R. Welch, who sent a selection of these animal

remains to the National Museum in Dublin. His beautifully illustrated article in the *Irish Naturalist* (vol. xi., 1902), on the Gobbins Cliffs, still remains vividly impressed on our minds, and many of us have been induced thereby to visit the magnificent cliffs, which, due to the enterprise of the Northern Counties Railway, have now been made easily accessible to the tourist.

The age of the remains found in the cave cannot be accurately determined, as the contents had been removed by the workmen before a scientific survey of the deposits had been made. But from the nature of the bones and to judge from the species they belong to, they may have been deposited within the last few centuries.

There was the greater part of the skeleton of a small Fox; the bones being uninjured. Hence it probably inhabited the cave and died a natural death there. The remainder of the bones are mostly such as might have been dragged into the cave by a Fox. The presence of the Red Deer is indicated by the occurrence of a fragment of a large antler which, at the time it met with its death, was still attached to the skull. All the Sheep remains, and there are many of all ages, are fragmentary, and had apparently been gnawed at. Then there were a few long bones of the Irish Hare, the Rabbit and Rat, and some fragments of an Ox and a Calf, and also of a Dog about the size of a shepherd's dog. The numerous bird remains have not yet been identified. They probably belong to sea-birds frequenting the coast, and which, occasionally, brought portions of their food into the cave, such as the Sea-bream, of which part of the head was discovered. Mixed up with the bones were the marine shells of *Littorina rufis*, *Helcion pellucidum*, and *Hydrobia ulva*, as well as a few specimens of *Hyalinia alliaria*, a species common in the district.

There is no reason to suppose that the caves were at any time inhabited by man.

R. F. SCHARFF.

'Dublin Museum.

GEOLOGY.

Lower Lias Reptilian remains at Belfast.

Northern readers of the *Irish Naturalist* may be interested to know that the heavy rain in September of the present year has exposed several new sections of Lower Lias rocks at Carr's Glen. This stream runs between the Cave Hill and Squire's Hill, and cuts through the Lower Lias and Upper Cretaceous rocks. The force of the mountain torrent has cleared the bed of the stream of boulders, and exposed splendid sections of Secondary rocks. In the zone of *Ammonites planorbis* (Sow.) I discerned three large vertebrae of a Reptile. This is the nearest locality to Belfast where Lower Liassic rocks are to be found.

R. BELL.

Belfast.]

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THE REV. MAXWELL H. CLOSE, M.A.,
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MAXWELL HENRY CLOSE, M.A.

ONE of the most familiar figures, one of the keenest thinkers, and one of the gentlest and yet most stimulating personalities, has passed from among the ranks of Irish men of science. At the age of eighty-one, the Revd. Maxwell H. Close died on September 12th, 1903, in the rooms long occupied by him in Lower Baggot Street, Dublin. For some years it had seemed to many of us that he moved in an area limited by those rooms, the house of the Royal Dublin Society, the Royal Irish Academy in Dawson Street, and the Church of the Magdalen Asylum in Lower Leeson Street. But within that area his activity, exercised in the quietest manner, was unceasing. Absolutely unconscious of himself, his mind seemed always filled with a consciousness of the wants of others. He subscribed towards the publication of literary or scientific works, with the object of encouraging research, and of giving some direct token of his goodwill to their authors; if the book, however, proved when issued to be of permanent value, he usually presented it to some library, where it would be more widely known than if he had kept it to himself. The library of the Royal Irish Academy was frequently enriched by gifts of this kind; and almost the last work of his life was the arranging of two series of drawings of Irish antiquities, which he then had bound at his own expense for presentation.

The list of his private benefactions will never become known. In making any unusually large donation to a charity, he preferred to remain anonymous, lest he should wound the feelings of some friend, to whose favourite scheme he had given less. But the best remembered feature of the help thus afforded by him will be his personal interest in those to whom he gave. This regard for others extended to the doings of the youngest scientific worker in the country; and it may be said that he gave away the results of many observations which other men would have published over their own names.

Maxwell Henry Close, the eldest son of the late Mr. H. S. Close, was born in Merrion Square East, Dublin, in 1822. Part of his schooldays were spent at Weymouth, where his head-

master predicted for him a brilliant career. His early taste for mathematical reasoning remained with him throughout life. He graduated, with the degree of B.A., at Trinity College (University of Dublin) in 1846, and was ordained in 1848. From 1849 to 1857 he was rector of Shangton, in the south of Leicestershire; and it was characteristic of him that he felt increasing doubts as to the propriety of retaining an office obtained by him under the system of lay-patronage. He finally resigned his rectorship on conscientious grounds, and became curate at Waltham-on-the-Wolds, a village on the Jurassic scarp between Melton Mowbray and Grantham. He held this post until 1861, and soon after, on the death of his father, settled permanently in Dublin, giving his services to various churches in the city. He received the degree of Master of Arts from his University in 1867, and was elected a member of the Royal Irish Academy on May 13th of the same year. By this time his position as a geological observer had become established by three papers on the traces of the glacial epoch in Ireland; these were the result of work in the field, and of journeys which led him into many remote portions of the country. It is probable that his love of the ancient language and antiquities of Ireland became strengthened and confirmed during these researches, which brought him frequently into contact with the peasant-populations of the west.

In his great paper on the general glaciation of Ireland (1866-7), Mr. Close showed that the land-ice of glacial times flowed "outwards from off the present land on every side of Ireland," and he accounted for the greater importance of the streams that moved south-east by suggesting that the west of the country and the plateau extending into the Atlantic stood formerly at a greater height than now. The gathering of an ice-field in the region between Lough Foyle and Lough Allen, from which the glaciation of northern Ireland radiated, is one of the most striking features shown on the map issued with his paper.

In 1872, Mr. Close published, with Mr. G. H. Kinahan, a pamphlet on the general glaciation of Iar-Connaught, pointing out the existence of a central area of dispersion in the Joyces' Country. This paper formed another and a practically unassailable contribution to the land-ice theory, as accounting

for glacial phenomena in Ireland ; and stress was again laid on the independence of the surface-form of the ice-massif and that of the underlying country, which it practically buried during its slow accumulation.

A paper still better known to British geologists is that on the high-level shell-bearing gravels deposited on the mountain-slopes near Dublin, which appeared in 1874. Mr. Close concluded in favour of the deposition of these gravels by the agency of floating ice. Whether that view is finally accepted or no, the paper will always be of value from the emphasis laid upon the drifted character of the shells, as distinct from those found in raised beaches. "The contained marine shells have been brought along with the gravel. Therefore the animals to which the shells belonged lived and died somewhere else, towards the north-west."

In 1878 and 1879, Mr. Close was President of the Royal Geological Society of Ireland, in which body he took an active interest until 1888, when its work became gradually merged in that of the Royal Dublin Society and the Royal Irish Academy. In his first presidential address, he adduced physical reasons for believing that the earth's age was far greater than that assigned to it by Sir William Thomson ; and in this matter he has been amply supported by the progress of both geological and physical opinion. His second address contained an important retrospect of the work of Sir Richard John Griffith, in which the successive issues of the first geological map of Ireland are admirably reviewed.

On November 30th, 1878, Mr. Close was elected Treasurer of the Royal Irish Academy, a post which he filled, with the most conscientious regard for all its details, until his resignation on March 16th, 1903. It may be safely stated that his increasing deafness in later years alone debarred him from occupying the Presidential chair of the Academy, for which his wide antiquarian and scientific knowledge fitted him in so remarkable a degree. He was also, for many years, a member of the science section of the Royal Dublin Society's Council.

Questions of mathematical physics always attracted him ; and, had he been less modest and considerate of others, he would have made a powerful controversialist. He was always willing to listen, ejaculating, "Ah—ah ! " in a characteris-

tically thoughtful and enquiring manner, as the argument became unfolded by the speaker. Yet, all the time he might be concealing intellectual weapons, which could utterly demolish the position, if once they were called out into play. The present writer remembers how a somewhat verbose speaker, at a meeting of the Academy's Council, concluded his harangue by turning to Mr. Close, with the words, "And I am sure in all this the Treasurer heartily agrees with me."

"No," said Mr. Close; "I disagree entirely." And this was his sole contribution to the debate.

It was this disinclination to press his own opinions, firmly rooted as they always were, which led him to publish two works under assumed names. Through the kindness of Mrs. M. Close, who has also supplied the portrait reproduced in the present number, a copy of the second edition of the rare *Ausa Dynamica*, by "John O'Toole," lies before us. "Claudius Kennedy" published *A few chapters in Astronomy* in 1894, in which such questions as the tides, the moon's variation, and Foucault's pendulum, are discussed from an original standpoint, and in a manner that contrasts vividly with the looseness of expression, and the slurring over of difficulties, which characterise many of the elementary works regarded as "good enough for a student."

In 1897, Mr. Close contributed what proved to be his last geological paper, on granite boulders near Dublin, to the *Irish Naturalist*; and in the following year he wrote for the same journal the obituary notice of his old friend Samuel Haughton. Preparing quietly for his approaching end, he arranged in 1902 for the distribution of many of his books and papers. Towards Christmas in that year, he seemed somewhat stronger than of late, and he would speak almost petulantly of his inability to do as much as he could desire. In March, 1903, he laid his last accounts before the Council of the Royal Irish Academy, and withdrew from the desk in the Treasurer's office, where he had attended almost daily for so many years. He died on September 12th, having performed to the full the life-task that he had set before himself. No thought of personal ambition had ever stirred him. He regarded even the Royal Irish Academy, in which he might have won pre-eminence, as a kind of monastic order, in which he was one of

many helpers, working for the advancement of the whole. The outside world saw in him an unobtrusive philanthropist, on whom it was always fair to make demands; but, to those who knew him, he has left the memory of one whose heart was in the intellectual progress of his country, and who none the less served her devotedly in a life of retirement and self-denial.

SCIENTIFIC PUBLICATIONS OF MAXWELL H. CLOSE.

1. "On some striated surfaces in the granite near Dublin." (1863). *Journ. Geol. Soc. Dublin*, vol. x. (1864), p. 96. (Deals with the origin of slickensides).
2. "Notes on the general glaciation of the rocks in the neighbourhood of Dublin." (1864). *Journ. Roy. Geol. Soc. Ireland*, vol. i. (1867), p. 3.
3. "Notes on the general glaciation of Ireland." (1866). *Ibid.*, p. 207. *Geological Magazine*, 1867, p. 234.
4. "On some peculiarities in the phenomena of glaciation, as indicating the nature of the agent?" (1866). *Journ. Roy. Geol. Soc. Ireland*, vol. i. (1867), p. 287. (A short paper, published in abstract, in favour of the land-ice theory.)
5. "Archdeacon Pratt on M. Delaunay's experiments on the internal fluidity of the earth." *Geol. Mag.*, 1870, p. 537.
6. "On some corries and their rock-basins in Kerry." (1870). *Journ. Roy. Geol. Soc. Ireland*, vol. ii. (1871), p. 236. (Deals with the glacial origin of cirques).
7. "The general glaciation of Iar-Connaught and its neighbourhood, in the counties of Galway and Mayo." By G. H. Kinahan and M. H. Close. 8vo. Dublin : Hodges, Foster & Co., 1872. (With a folding map).
8. "The elevated shell-bearing gravels near Dublin." *Geol. Mag.*, 1874, p. 193. *Journ. R. Geol. Soc. Ireland*, vol. iv. (1877), p. 36.
9. "The Geology of the County Cork." In Cusack's "History of the City and County of Cork," pp. 419-453, coloured map. 8vo. Dublin and Cork, 1875.
10. "Concerning the extent of geological time." *British Assoc. Report*, 1878, p. 548. *Geol. Mag.*, 1878, p. 450.
11. "The Physical Geology of the neighbourhood of Dublin." *Sci. Proc. R. Dublin Soc.*, vol. i. (1878), p. 133. *Journ. R. Geol. Soc. Ireland*, vol. v. (1880), p. 49. (Written in connexion with the visit of the British Association to Dublin. Includes a coloured geological map by Mr. R. G. Symes).
12. Anniversary Address to the Royal Geological Society of Ireland, Febr. 18, 1878. *Sci. Proc. R. Dublin Soc.*, vol. ii. (1880), p. 5. *Journ. R. Geol. Soc. Ireland*, vol. v. (1880), p. 1.
13. Ditto, Febr. 17, 1879. Same journals, vol. ii. (1880), p. 191, and vol. v. (1880), p. 132, respectively.

14. "On the definition of force as the cause of motion, with some of the inconveniences connected therewith." (1882.) *Sci. Proc. R. Dublin Soc.*, vol. iii. (1883), p. 336.
15. "On the meaning of 'Force.'" *Phil. Mag.*, 5th ser., vol. xv. (1883), p. 248.
16. "The Geology of the neighbourhood of Dublin as affecting its Sanitary Conditions." *Trans. Sanitary Inst. of Great Britain*, vol. vi. (1884). (Written for the meeting of the Institute in Dublin).
17. "Ausa dynamica: Force, Impulsion, and Energy." ("Darings in dynamics"). By John O'Toole. 8vo. Dublin : Hodges, Figgis, & Co., 1884. 2nd edition, enlarged, 1886. (Includes an essay on the dynamics of the oar).
18. "Note on the Moon's variation and parallactic inequality." *Proc. R. Irish Acad.*, 3rd ser., vol. ii. (1891), p. 65.
19. "A few chapters in Astronomy." By Claudio Kennedy, M.A. 8vo. London : Taylor and Francis, 1894.
20. "The former abundance of granite boulders in the S.E. neighbourhood of Dublin." *Irish Naturalist*, vol. vi. (1897), p. 29.
21. Obituary notice of Kevd. Samuel Haughton. *Ibid.*, vol. vii. (1898), p. i.
22. "Remarks on a cosmographical tractate in the Irish language in the library of the Royal Irish Academy." *Proc. R. Irish Acad.*, 3rd ser., vol. vi. (1901), p. 457. (An account, with characteristic touches of humour, of an Irish version, made about 1400 A.D., of an Arabic astronomical treatise).
23. "Hipparchus and the precession of the equinoxes." *Ibid.*, 3rd ser., vol. vi., p. 450. (Intended to prove finally that Hipparchus believed that the increase of the longitudes of the fixed stars was due to an eastward progression of the stars themselves, and not, as now held, to a westward retrogression of the equinoctial points).

G. A. J. COLE.

NEWS GLEANINGS.

Professor A. Francis Dixon.

It is with much satisfaction that we record the appointment of Dr. A. Francis Dixon to the Chair of Anatomy at Dublin University vacated by the transfer of Professor Cunningham to Edinburgh. Like his illustrious predecessor, Dr. Dixon adds to a thorough knowledge of human anatomy a keen interest in zoological science. His early work in Ireland on the anatomy of sea-anemones will always be remembered by naturalists, and we trust, now that he has returned to Dublin, he will find time to advance our knowledge of Irish natural history.

NOTES ON THE MOLLUSCA OF COUNTY KILKENNY.

BY P. H. GRIERSON.

I SEND some notes taken of the Mollusca of Co. Kilkenny during the first half of each of the years 1902-1903. I had no opportunity of exploiting the S.W. corner, near Piltown; or the S.E. side, between New Ross and Waterford town. The county is well drained by various rivers nearly all flowing in a southerly or south-easterly direction. There are practically no lakes; the only one of any size—Lough Cullen—which lies about five miles north of Waterford, I was unable to visit.

I am much indebted to Messrs. R. Welch and L. E. Adams, for help, the former for naming various *Hyaliniae* and *Pisidia*, the latter for naming slugs, &c.

In giving the following list I have followed Dr. Scharff's nomenclature as given in *Irish Naturalist*, 1892. I also give the numbers of the sheets, one inch Ordnance Survey map, where the specimens were taken, after the name of the nearest town. The county comprises portions of eight sheets, viz.:—
136, 137, 146, 147, 156, 157, 167, 168.

Vitrina pellucida.—This species is common, but not easy to find except in winter and early spring.

Hyalinia cellaria.—These shells are common, a large number being var. **vitrina**. Var. **albina** at Gowran (147).

H. alliaria.—Castlecomer (137); Kilkenny and Kilmanagh (146); Ullard (var. **viridula**) (147); Callan (var. **viridula**) (156); Inistioge (157); near Waterford (var. **viridula**) (168). Fairly well distributed.

H. nitidula.—N.E. of Attanagh (var. **helmii**) (136); Freshford and Ballyragget (136); Kilkenny, Kilmanagh, S.W. of Freshford, Callan Road (146); Ruthstown, Gowran, Ullard (147); near Stoneyford and Callan (156); Inistioge (157); Silverspring and near Waterford (168). Common.

H. pura.—N.E. of Attanagh, Freshford, Ballyragget (136); Castlecomer (137); Callan Road (146); Kilkenny, Gowran, Powerstown, (var. **nitidosa**) (147); Callan (156); Thomastown (var. **nitidosa**) (157). Common.

H. radiatula.—Ballyragget, N.E. of Attanagh, Freshford (var. **viridescenti-alba**) (136); Clogh (137); 3 m. S.W. Freshford (var. **viridescenti-alba**) (146); Powerstown and N. of Graiguenamanagh (147); Callan (156); Inistioge (157); near Waterford (168). Common.

H. crystallina.—Johnstown, Freshford (136); Clogh (137); Kilmanagh (146); Kilkenny (147); Callan (156); Thomastown (157); Silverspring and near Waterford (168). Fairly common.

H. fulva.—N.E. of Attanagh (136); Clogh and Castlecomer (137); W. of Kilkenny (146); Gowran (147); Ballinvarry (157). Uncommon.

H. nitida.—Freshford and Ballyragget (136); near Kilkenny and Ullard (147); Graiguenamanagh (157). Not common.

Ariol ater.—Well distributed.

A. hortensis.—Fairly common.

A. circumscriptus.—Common.

Testacella Maugaei.—Two specimens were sent to me from Jenkins-town garden (136). Rare.

Limax maximus.—Jenkinstown (146); Thomastown (157); near Waterford (168). Not very common.

L. marginatus.—Ballyragget (136); Kilkenny (147); S.E. of Callan (156); Mullinavat (168). Not very common.

Agriolimax agrestis.—Very common. Var. **Illicina** at Jenkinstown (146).

A. laevis.—Near Waterford (168). Rare.

Amalia sowerbyi.—Kilkenny (147); Thomastown (157). Rather rare.

A. gagates.—Jenkinstown (146); Kilkenny (147); S.E. of Callan (156); Thomastown (157); near Waterford (168). Fairly common.

Helix pygmaea.—Near Attanagh (136); Castlecomer (137); Kilmanagh, Urlingford and Callan Road (146); Kilkenny and Gowran (147); Callan (156); Thomastown (157). Not uncommon.

H. rotundata.—Very common.

H. rupestris.—Attanagh, Johnstown, Connaghy (136); Kilkenny, Jenkinstown, and 3 m. S.W. of Freshford (146); Gowran (147); Callan (156); Thomastown (157); near Waterford (168). Rather common on limestone walls.

H. pulchella.—Freshford, Ballyragget (136); 3 m. S.W. Freshford (146); Kilkenny and Bennetsbridge (var. **costata**) (147); Gowran (147); Callan (156); Ballinvarry (157); near Waterford (var. **costata**) (168). Common; var. **costata** rather rare.

H. aculeata.—Attanagh (136); Castlecomer (137); Gowran and Kilkenny (147); Callan (156). Not uncommon, but rather difficult to find.

H. lamellata.—Thomastown (157). Common in a plantation there, but rare in the county.

H. hispida.—Very common.

H. rufescens.—Attanagh, Johnstown, and Freshford (136); Clogh (137); Jenkinstown (146); Kilkenny and Gowran (147); Callan (156); Thomastown (157); near Waterford (168). Common near old buildings under stones.

H. fusca.—Castlecomer (137); Thomastown (157). Rare.

H. virgata.—Attanagh, Johnstone, Ballyragget (136); Clogh (137); Jenkinstown (146); Kilkenny and Goresbridge (147); Kells (156); Newmarket and Thomastown (157). Common.

H. intersecta.—Attanagh, Ballyragget (136); Clogh (137); N. of Callan (146); Goresbridge (147); S. of Callan (156); Thomastown and Newmarket (157); near Waterford and Silverspring (168). Common on the limestone formation.

H. ericetorum.—Attanagh, Ballyragget, Johnstown (136); Castlecomer (137); Jenkinstown and 3 m. S.W. of Freshford (146); Kells (156); Goresbridge (147); Thomastown (157); Mullinavat (168). Common on the limestone formation.

H. acuta.—N.E. of Attanagh (136); Kilkenny (147); Thomastown (157). Very local, but abundant where it occurs.

H. nemoralis.—Very common.

H. hortensis.—Near Kilkenny (146); on bank under hedge, several dead specimens. Rare.

H. aspersa.—Common all over the county.

Bullimus obscurus.—Callan Road (146); Attanagh (136); Kilkenny (147). Rather rare.

Cochlicopa lubrica.—Common.

Cecllianelia acicula.—Two miles S. of Ballyragget (136); 3 m. S.W. of Freshford, Ardalo Abbey (146); 1 m. S. of Kilkenny, in old quarry; $\frac{5}{3}$ m. E. of Kilkenny, and $1\frac{1}{2}$ E. of Kilkenny (147); Callan (156); Thomastown (157). The above were found by turning over stones in dry limestone situations, and the shell was fairly common in these stations.

Pupa anglica.—Attanagh (136); Muckalee (137); 3 m. S.W. of Freshford (146); Gowran (147); Callan (156); Thomastown (157). Rather common in damp shaded situations.

P. cylindracea.—Common.

P. muscorum.—Three Castles (146); Kilkenny (147); Callan (156). To be found under stones in dry limestone quarries. Not rare.

Vertigo edentula.—Lisdowney (136); Kilkenny (147); Callan (156); Thomastown, Inistioge, Ballinvarry, Graiguenamanagh (157). Rather common.

V. pygmaea.—Freshford, Connaghy (136); Clogh (137); 3 m. S.W. of Freshford (146); N. of Graiguenamanagh (147); Callan (156); Thomastown and Inistioge (157); Kilmacow (168). Rather common.

V. substrriata.—Callan road (146); Kilfane (147). Rare.

V. antivertigo.—Freshford (136); Clogh (137); Jenkinstown (146); Kilkenny and Powerstown (147); Inistioge and Ballinvarry (157); near Waterford (168). Common in damp situations.

V. angustior.—I could not find this shell in the county, but took a number of specimens on east side of R. Barrow in Co. Carlow at Borris bridge.

Balea perversa.—Freshford (136); Castlecomer (137); Kilmanagh (146); Powerstown (147); Kells (156); Thomastown (157). Rather local.

Clausilia bidentata.—Common.

Succinea putris.—Freshford (136); N. of Graiguenamanagh (147); near Waterford (168). Not common.

S. elegans.—Freshford (136); Jenkinstown (146); Kells (156); Silver-spring and near Waterford (168). Not common.

Carychium minimum.—Lisdowney (136); Clogh (137); Urlingford and Jenkinstown (146); Kilkenny and Gowran (147); Thomastown

Initioge, Ballinvarry (157); Silverspring and near Waterford (168). Common on roots of grass and among leaves in damp situations.

Limnaea stagnalis.—Urkingford and L. Macask (146). Rare, except in L. Macask, where it is very plentiful.

L. peregra.—Common everywhere.

L. palustris.—Ballyragget (136); Clogh (137); East and West of Kilkenny (146 and 147); Callan (156); Thomastown, Newmarket, Ballinvarry, Graiguenamanagh (157); near Waterford (168). Common.

L. glabra.—Recorded by Thompson from Kilmacow. I did not get it.

L. truncatula.—Common.

Physa fontinalis.—Attanagh (136); S. of Freshford (146); Kilkenny, Kilfane, (147); Callan (156); Silverspring and near Waterford (168); Not common.

Aplexa hypnorum.—Attanagh, Freshford (136); Clogh (137); 3 m. S. of Freshford (146); Kilkenny, Ruthertown, Goresbridge, Kilfane (147); Callan (156); Thomastown (157); Silverspring and near Waterford (168). Rather common.

Planorbis marginatus.—Common.

P. carinatus.—Urkingford (146); Ullard (147); Ballinvarry (157). Not common.

P. spirorbis.—Very common.

P. contortus.—Freshford (136); Muckalee (137); W. of Kilkenny (146); Kilkenny and Gowran (147); Thomastown (157); Silverspring (168). Not very common.

P. albus.—Gowran (147); Callan (156); Thomastown, Ballinvarry and Graiguenamanagh (157). Not common.

P. glaber.—Gowran (147). Rare; it is difficult to find, being so small.

P. cristata.—Gowran (147); 2 m. S. of Kells (156). Rare.

P. fontanus.—Kilbrahan (146); Kilkenny (147); 2 m. S.W. of Kells (156); Silverspring (168). Difficult to find, except in summer when feeding.

Ancylus fluviatilis.—Common locally.

Acme lineata.—Muckalee (137); Graiguenamanagh (157). Rare.

Bythinla tentaculata.—Rather common.

Hydrobia Jenkinsi.—Near Waterford (168). Common in brackish water.

Valvata piscinalis.—Attanagh, Freshford (136); S. of Freshford (146); Thomastown, Ballinvarry (157); Silverspring (168). Not common.

V. cristata.—Attanagh, Freshford (136); S. of Freshford (146); Kilkenny (147); Callan (156); Thomastown, Ballinvarry (157); Silverspring (168). Fairly common.

Neritina fluviatilis.—Ullard (147); Graiguenamanagh (var. *nigrescens*) (151). I found these only in R. Barrow.

Sphaerium corneum.—Ballyragget (136); near Kilkenny (146 and 147); Callan, Kells (156); Thomastown, Graiguenamanagh (157); Silverspring (168). Rather common.

S. lacustre.—Near Waterford (168). Rare; I only took it in one place.

Unio margaritifer.—R. Barrow at Ullard (147). Said to be common in this river, but not easy to get except when the water is very low.

Pisidium amnicum.—Thomastown (157).

P. pulchellum.—Kilkenny (147).

P. fontinale.—Kilkenny, Ullard (147); Graiguenamanagh (157).

P. milium.—Kilkenny (146); Graiguenamanagh (157).

P. obtusale.—Kilkenny, Ullard (147).

P. pusillum.—Freshford (136); 3 m. S.W. Freshford (146); Kilkenny, Powerstown, Ullard (147); Graiguenamanagh (157); near Waterford (168)

HIERACIUM ORARIUM AND H. RIVALE IN IRELAND.

BY R. LLOYD PRAEGER.

AMONG some Hawkweeds kindly examined for me recently by Rev. E. F. Linton, are two interesting forms which are hitherto unrecorded from Ireland, and several others which are rare in this country. The plants in question were gathered by myself, at various times, and awaited naming by an authority.

Hieracium flocculosum, Backh.—Basalt cliffs, Kinbane, Co. Antrim, 19 July, 1891. Previously known in Ireland from one other locality in Antrim (Sallagh Braes), and one in Down (Mourne Mountains).

H. Sommerfeltii, Lindeb.—Hare's Gap, Mourne Mountains, Co. Down, August, 1889. Previously recorded from one station in West Donegal and one in Derry.

H. rivale, F.J.H., var. **subhirtum**, F.J.H.—Cliffs of Pigeon Rock Mountain at 1,400 feet, and of Eagle Mountain at 1,500 feet, 11 and 13 July, 1890. Both stations are in the Mourne Mountains. *H. rivale* is mainly a plant of N. and N.W. Scotland. The var. *subhirtum*, F.J.H., has its headquarters in Perthshire; Mr. E. F. Linton tells me it is suspected of being a named Scandinavian form.

H. Orarium, Lindeb., var. **fulvum**, F.J.H.—Stony shore of Lough Conn south of Derreen, W. Mayo, 27 July, 1900. This species, has a very scattered distribution in Britain, growing in the north of Scotland, Yorkshire, Derbyshire, and Wales.

H. strictum, Fr., var. **subcrocatum**, Linton.—Rocks on the edge of Lough Dan, Co. Wicklow, 29 July, 1893. *H. strictum* was recorded from Glenmalur in the same county by Isaac Carroll half a century ago (*Phytol.* v. 76, 1854)—its only station outside Donegal, Antrim, and Derry; so its rediscovery is welcome. The variety has not been recorded from Ireland before.

IRISH SOCIETIES.

ROYAL ZOOLOGICAL SOCIETY.

Recent gifts include a Golden Pheasant from Mr. W. S. Bagg, a pair of Barn-owls from Mr. F. Coppinge, two Linnets, two Larks, two Meadow Pipits, two Twites and two Redpolls from Messrs. Williams, eight Barbary Doves from Mr. J. Angus, a Kestrel from Mr. W. R. Green, two Himalayan Bears from Mr. C. W. Dunn, and a Baboon from Mr. P. J. Fox. A glass screen has been added to the Giraffe-house which enables visitors to see the animals while sheltering from the cold weather. The new arrangement of the Monkey-house now in progress will largely add to the comfort and convenience both of the inmates and their human visitors.

DUBLIN MICROSCOPICAL CLUB.

OCTOBER 17.—The Club met at Leinster House. MR. MOORE exhibited an inflorescence of the rare and curious Orchid, *Megaclinium triste*, from tropical Africa. The flowers are crowded together at the apex of a stout rachis some eighteen inches long, each flower enclosed in a bract. These bracts are closely imbricated, and of a bronzy-green colour, so that the unopened part of the inflorescence strikingly resembles the body of a lizard. The flowers are black, and the labellum is very delicately hinged, the slightest disturbance causing it to move up and down. Segments of the flower were also exhibited under the microscope.

MR. MCARDLE exhibited a Hepatic which he detected among specimens sent to him by Mr. Hunter of Belfast, who collected it on schist rocks at Rathmullan, County Donegal, in September last. No fruit, as yet, has been found. Considerable diversity of opinion exists among experts as to its name. Comparison with Norwegian and other specimens will be necessary to establish its identity. The branching and cell structure was shown under the microscope, and it is an interesting addition to the Irish cryptogamic flora.

BELFAST NATURAL HISTORY AND PHILOSOPHICAL SOCIETY.

NOVEMBER 3.—The eighty-third Session opened, and the incoming President, Professor J. SYMINGTON, M.D., F.R.S., delivered an inaugural address on "John Grattan: an Appreciation of his Scientific Work." The President gave an interesting account of the pioneer work which John Grattan had accomplished in craniology, and exhibited and explained the actual machine which Grattan invented and made for the purpose of accurate measurement of skulls. Grattan's work was practically unknown owing to his papers having been chiefly published in an unsuitable journal, and also owing to his work being unfinished

at the time of his death. But Professor Symington intimated that he intended publishing a full account of Grattan's methods and machine in the proper scientific journals. Grattan belonged to that group of scientific investigators who had endeavoured to ascertain the physical characteristics of the pre-historic races of this country, and his researches and inventions were calculated to aid in the accurate determination of the differences between the various races of mankind, and the zoological position of man himself.

BELFAST NATURALISTS' FIELD CLUB.

OCTOBER 28.—ANNUAL CONVERSAZIONE.—The Exhibition Hall in Botanic Gardens Park was filled with the exhibits. Tea was served from 7 to 8 o'clock, and over 350 members and friends attended. At 8.30 the President, W. J. FENNEL, M.R.I.A.I., took the chair and delivered a short address. After welcoming the visitors, he congratulated the Club on the great success which had attended its summer excursions. He mentioned that the efforts of the Club to preserve Greyabbey have been successful, their recommendations receiving prompt attention from the owner. A member of the Club, Robert Bell, had added a new mineral, dopplerite, to Ireland, and many members were taking an active part in the work of the sister organisation—the Ulster Fisheries and Biology Association. He reminded them that the Club was now taking another step in advance, and that they had secured the use of a room in the Museum, College Square. That room would be open every Wednesday evening from 7 to 9 o'clock, and he asked all who desired to aid the Club to meet there from week to week and exhibit interesting objects, raise discussions, or consult the Library.

Seven new members were elected. One of the Secretaries then read an Address to William Gray, M.R.I.A., on his retirement from the Committee after forty years continuous service. Mrs. Fennell presented Mr. Gray with a well-filled purse of sovereigns, and Mr. Gray feelingly replied. The address had been beautifully illuminated by John Vinycomb, M.R.I.A., Member.

A lantern exhibition of photographs, taken on the Club excursions, and a cinematograph display of microscopic animal and vegetable life, concluded this portion of the programme, and the inspection of exhibits continued. The following is a list of the exhibits:—

N. CARROTHERS—Collection of mounted Ferns and Flowering Plants. GEORGE DONALDSON—North American Ferns. NEVIN H. FOSTER—Varieties of the Lady Fern, *Athyrium Filix-femina*. P. F. GULBRANSEN—A new method of mounting Plants. W. H. PHILLIPS—Variations of British Ferns. R. LL. PRAEGER, M.R.I.A.—Rare Plants from the Ards, including *Glyceria festuciformis*, new to the British Flora; Rare Plants from Clare Island, Co. Mayo. REV. C. H. WADDELL, B.D.—Flowering Plants from the Isle of Man; Rare Mosses of Co. Down. F. J. BIGGER, M.R.I.A.—Land-shell pocket material from the Horn Head sand-dunes, containing many Vertigoes. JOHN COTTNEY—Birds' Eggs, and Nests.

REV. G. FOSTER—Irish Butterflies and Moths; Butterflies and Moths collected in Brittany last July. **W. H. GALLWAY**—Living Green Lizard, etc. **W. A. GREEN**—Mounted Birds, etc. **REV. W. F. JOHNSON, F.E.S.**—Rare Irish Beetles. **D. E. LOWRY**—A large Pike, mounted. **H. LAMONT ORR**—Nest of Bullfinch. **JAMES ORR**—Sea Urchins from Bundoran. **ROBERT PATTERSON, M.R.I.A.**—Nest of Goldfinch; Living Bat. **GEORGE E. REILLY**—Nest of Magpie. **PROF. GREGG WILSON, D.Sc., M.R.I.A.**—Specimens illustrating adaptation to environment. **W. H. WORKMAN, M.B.O.U.**—Algerian Bird-skins. **MISS M. K. ANDREWS**—Microscopic Sections of Rocks near the junction of Granite and Silurian, Glen River, Newcastle, Co. Down. **ROBERT BELL**—Liassic Cephalopoda from Waterloo, Larne; the new Irish mineral Dopplerite, from the peat of Sluggan Bog. **F. C. FORTH, A.R.C.Sc.I.**—Geological Specimens and Models of Crystals. **GEORGE C. GOUGH, A.R.C.Sc.**—Sections of Fossil Plants, Crystals and Rocks; Shells of Gastropods cut to show interior; Fossils (fish, crabs, etc.), and minerals used as ornaments, and Precious Stones. **Miss ANDREWS**—Very fine flax thread spun at Comber at the end of the 18th century. **W. & G. BAIRD, Ltd.**—Photo-process Blocks in all stages of manufacture. **F. J. BIGGER, M.R.I.A.**—Irish Straw Crosses; Photographs of Donegal peasant life. **C. M. CUNNINGHAM, L.D.S.**—Exhibit of Electrotyping and Plating with home-made appliances. **ROBERT DAY, M.R.I.A.**—“Table book” with illuminated title, enclosing an autograph letter from Charlotte, Duchess of Richmond, to Earl O'Neill, July 12, 1586; Oliver Cromwell's Belt Pistol; Ancient Irish spirally twisted Silver Torc with loop and knot attachment, &c., &c. **Mrs. W. J. FENNELL**—Model of the High Cross of Monasterboice; Model of the O'Kelly Seal found in Kilconnell Abbey. **W. J. FENNELL, M.R.I.A.I.**—Facsimiles of the famous Limavady Gold Ornaments, kindly lent by Edmond Johnson, Jeweller, Dublin. **F. C. FORTH, A.R.C.Sc.I.**—Sketches showing natural flowers and foliage applied to Art Decorative work. **WILLIAM GRAY, M.R.I.A.**—Photographs taken on the Summer Excursions. **ROBERT MAY**—A Bronze Lamp found in peat bog near Ballymoney. **W. F. M'KINNEY**—An Irish Quern; Gum from New Zealand. **Mrs. RIDDEL**—Irish-made Toys from Ballycastle Toy Industry (Irish Models, Cottage Furniture, Farming Utensils, Carts, etc.). **ADAM SPEERS, B.Sc.**—Miscellaneous. **J: VINYCOMBE, M.R.I.A.**—Heraldic Shields; Heraldic Seals; Bockplates; 19 Photographs of Addresses presented to Their Majesties in Belfast. **R. WELCH**—Photographs of the Sheephaven and Mulroy districts, N. Donegal.

DUBLIN NATURALISTS' FIELD CLUB.

SEPTEMBER 26.—EXCURSION TO OLDBAWN.—A party of sixteen took the 1.0 o'clock steam tram to Tallaght, whence they walked to Oldbawn Bridge, on the Dodder. Here Mr. Praeger, who conducted, briefly pointed out the features of the neighbourhood. The river has cut a broad terraced valley in the boulder-clay, and is now cutting sometimes through its own gravel terraces, sometimes through the solid drift. The

river terraces were explored from Old Bawn to Bohernabreena Bridge. A characteristic flora was noticed, including *Saponaria*, *Ononis arvensis*, *Poterium Sanguisorba*, *Parnassia*, *Erigeron acre*, *Carlina*, *Hieracium boreale*, *Gentiana Amarella*, *Chlora*, *Origanum*, *Euphorbia exigua*, *Bromus erectus*, *Equisetum variegatum*. The abundance of *Helix virgata* and *H. ericetorum* was very noticeable. A brown boulder-clay was seen in several spots apparently underlying the characteristic blue clay of the district, and calls for further investigation. The party returned to town by the 5.20 tram from Tallaght.

NOVEMBER 3.—The twentieth winter session of this Club was inaugurated by a Conversazione held in the rooms of the Royal Irish Academy and largely attended by members and visitors. Messrs. W. H. Phillips and Nevin H. Foster represented the Belfast Club, and Limerick was represented by Mr. F. Neale.

The Vice-President, F. W. BURBIDGE, M.A., F.L.S., occupied the chair and delivered an interesting address on the part played by observation in the study of Natural History, illustrating the subject by a series of very beautiful lantern slides chiefly of botanical scenery. The Conversazione broke up about 10.30 p.m. During the evening a number of scientific exhibits were displayed, including the following:—J. ADAMS, B.A.—Living specimens of local Seaweeds, and microscopical preparations of some of them. F. W. BURBIDGE, M.A., F.L.S.—Specimens of botanical interest from Trinity College Botanic Gardens. G. H. CARPENTER, B.Sc., and J. N. HALBERT—Insect cases from the exhibition collection of Irish Animals in the National Museum. G. H. CARPENTER, B.Sc., and D. R. PACK-BERESFORD—Nest inhabited by colony of *Vespa ruja* and *V. austriaca*, with series of both forms to show variation. [See *Irish Naturalist*. Sept., 1903.] J. A. CLARKE—Ciliary movement in epithelium of Frog's mouth. T. CROOK, A.R.C.Sc.I.—Various Crystal Types. WILLOUGHBY DADE—Microscopic specimens of Pond Life. J. DUFFY—Fossils from the Lower Carboniferous Limestone of Little Island, Co. Cork, St. Doulagh's and Cloghran, Co. Dublin. F. O'B. ELLISON, B.A.—Radium-bearing Pitchblende and other ores of rare metals. A. H. FOORD, PH.D.—*Heliopora cerulea*, and one of its ancestors. MRS. W. S. GREEN—(1.) Nest of a South African Fuintye from the Transvaal; (2.) A roll of home-grown and home-rolled tobacco from the same district. W. F. GUNN—(1.) Sprays of Trees and Shrubs illustrating Autumn Tints, and sprays of Berried Shrubs; (2.) Hygrometric "seeds" of *Anthoxanthum odoratum* (Sweet Vernal grass); (3.) Spiral fibres from the epidermis of seeds of *Collomia coccinea*. MISS HENSMAN—A Dodder plant with three host-plants, Clover, Flax, and Grass. J. de W. HINCH—Fossil Mollusca from Co. Dublin Glacial Drift. PROF. T. JOHNSON, D.Sc.—A selection of dried plants, collected by students during a short summer course at the Royal College of Science. MISS M. C. KNOWLES and MISS O'BRIEN—New records for the Co. Limerick Flora. F. W. MOORE, M.R.I.A.—Small selection of interesting plants and flowers from the Royal Botanic Gardens, Glasnevin. D. MCARDLE—Selection of Rare Irish Mosses and Hepaticas. MISS A. L.

MASSY—(1.) Cowries from the Andaman Islands; (2.) Some Achill Mollusca. A. R. NICHOLS, M.A.—Some "Pearl-Oysters" and Pearl-bearing Mussels. R. LL. PRAEGER, B.A.—(1.) Rare Plants from Co. Down, including *Glyceria festucæformis*, new to the British Flora; (2.) Rare Plants from Clare Island, Co. Mayo. GEO. H. PETHYBRIDGE, PH.D., B.Sc.—*Rhytisma Andromedaæ*, a fungus new to the Counties Dublin and Wicklow. GEO. H. PETHYBRIDGE, PH.D., B.Sc., and R. LL. PRAEGER, B.A.—Map of part of the Dublin Mountains showing the distribution of the vegetation. H. J. SEYMOUR, B.A., F.G.S.—Sedimentary Rocks from Co. Cork. R. J. USSHER, D.L.—(1.) Pennant's Globe Fish (*Tetraodon lagocephalus*); (2.) A Honey Buzzard from Co. Waterford; (3.) A Head of a female Irish Elk from Co. Waterford. A. H. VARIAN—(1.) Moths and Butterflies caught during the year; (2.) An appliance for showing small moths. R. P. VOWELL and R. M. BARRINGTON, LL.B.—Specimens of the Cloud-berry, *Rubus Chamomorus*, from Co. Tyrone. E. WILLIAMS—(1.) Abnormal varieties of Rook (*Corvus fugilegus*); (2.) A Chough (*Pyrrhocorax graculus*) from Achill Island; (3.) Buff variety of Irish Hare (*Lepus variabilis*) from Donabate; (4.) Common Tern (*Sterna fuscata*) and nestlings.

Three new candidates were proposed for membership of the Club.

NOTES.

BOTANY.

Donegal Cryptogams.

To the *Journal of Botany* for November, Rev. H. W. Lett contributes a list of 115 mosses and 73 hepaticas collected near Slieve League in 1902. *Scapania rosacea* is recorded as new to Ireland.

Rhinanthus segregates.

In recent papers on *Rhinanthus* in the *Journal of Botany*, by Rev. E. S. Marshall (October), and Mr. G. C. Druce (November), a few Irish records for some recent "splits" will be found.

Archangelica officinalis in Ireland.

By way of supplementing Mr. Praeger's note on this plant in *Irish Naturalist* for September (p. 246), I would mention that it has been cultivated by me in the garden here for many years; it has also been cultivated for at least the last thirty years, and is still in the old garden of Seagoe Rectory, near Portadown; and I have known it during the last fifty years in two gardens near Lisburn.

H. W. LETT.

Loughbrickland.

Rubus Chamaemorus again observed.

On September 6th we made a search for *Rubus Chamaemorus* in its only known Irish locality, where it was rediscovered on August 10th, 1892 (*Journ. Bot.*, 1892, p. 279, and *Irish Nat.*, 1892, p. 124). Although the exact locality, to within a few yards, was soon recognized, it was with no little difficulty that a few plants were found. The first thing to attract attention was a couple of leaves, withered and detached, lying on peat; subsequently others were seen here and there, and then a few green leaves half concealed among the stunted heather.

This most interesting Irish plant looks as if it were just struggling for existence, and that it has borne either flower or fruit for many years seems improbable. On this visit we made quite certain, from the six-inch ordnance map, that both localities given in the *Cybele Hibernica* (new edition) are considerably more than a mile from the nearest point of Londonderry, and that the species is entirely confined to Co. Tyrone. We cannot help thinking that a careful and minute search on the highest portions of the adjoining hills in Tyrone and Derry would prove that *Rubus Chamaemorus* is not confined to one mountain in Tyrone.

That the present locality is identical with the old record we have no doubt, and it is curious that both in 1826 and in 1892 it was erroneously believed that the locality where it grows was on the boundary line between Derry and Tyrone. There was no six inch map in 1826, and in 1892 it was unfortunately not referred to. Had it been, the plant would never have been recorded as occurring in Derry, though it is quite possible it may yet be found in that county by some keen-eyed botanist. The fragments collected on this occasion have been given to the Dublin Museum.

RICHARD P. VOWELL.

RICHARD M. BARRINGTON.

Dublin.

Lathyrus Aphaca at Stranmillis, Co. Antrim.

This plant has been observed at Stranmillis from 1864 to 1872, see *Flora N.E.I.*, p. 276. Last August I came across a few plants growing in a shady place in a field east of the Botanic Gardens Park, in the same neighbourhood. As this ground will shortly be utilised for building purposes, and is at present a play-ground for children, I am afraid this beautiful and curious *Lathyrus* will very soon cease to exist at this station.

N. CARROTHERS.

Belfast.

Glyceria festucæformis.

In the *Journal of Botany* for November, Dr. A. B. Rendle describes and figures this Irish addition to the flora of the British Islands. The bulk of the paper consists of extracts from Mr. Praeger's paper in the October number of the *Irish Naturalist*.

ZOOLOGY.

Irish Copepod Crustaceans.

These Crustaceans are of such vast importance to our sea fisheries, since many of our food fishes depend on them for their daily rations, that any increase in our knowledge of these minute creatures helps us to solve some weighty fishery problems. To a large measure the amount of our country's income is dependent on the habits of the Copepoda, and no one need wonder, therefore, why Mr. Farran, at the instance of the Fishery Inspectors, has taken in hand the study of this difficult group of animals. "(Record of the Copepoda taken off Cleggan, Co. Galway : " *Report on Sea and Inland Fisheries of Ireland, 1901*, pt. 2.) Mr. Farran has observed about 40 species on the west coast, one of which, new to science (*Getanus pileatus*), is described and figured.

Convolvulus Hawk-moth near Belfast.

I have had given me to-day (September 4) a live specimen of *Sphinx convolvuli* in fine condition, which was captured at Knock, Belfast. From its fresh appearance I should say it had not long emerged from its pupa case.

H. LAMONT ORR.

Belfast.

Convolvulus Hawk-moth at Londonderry.

On 8th September a specimen of *Sphinx convolvuli* was brought to me. It was picked up in the city by a lad. It is the first occurrence I know of in this district.

D. C. CAMPBELL.

Londonderry.

Lepidoptera taken near Limerick.

When at Limerick on the Dublin Field Club Excursion I had the opportunity of looking over a small collection of lepidoptera taken by the Rev. R. M'Clean in that neighbourhood, and among commoner species the following are worthy of note:—*Leucophasia sinapis*; *Epione advenaria*, not rare in Cratloe Wood; *Eurymene dolobraria*, several; *Pericallia syringaria*, three; *Selina lunaria*, one at Cratloe Wood; *Acidalia candidata*, do.; *Bapta tenerata*; *Panagra petraria*, numerous at Cratloe; *Lobophora halterata* and *L. viretata*, not rare at Cratloe; *Melanippe tristata* and *Eucosmia undulata*, Cratloe, a few. Of the above, *Epione advenaria* (already recorded by Mr. Carpenter, *J. Nat.*, vol. xi., p. 19) seems the most important discovery, only one other locality in Ireland being known, but the *Pericallia* and *Selina* are most welcome additions to the hitherto known distribution.

W. FRAS. DE VISMES KANE.

Drumreask, Monaghan.

Some Irish Nudibranch Molluscs.

A list of the Nudibranchiate Molluscs of Ballynakill and Bofin Harbours, Co. Galway, is given by Mr. G. P. Farran in Part II. of the *Report on the Sea and Inland Fisheries of Ireland* for 1901. The variety of ground in Ballynakill Harbour evidently affords good collecting ground for Nudibranchs, as fifty-one species are enumerated in the list, and nearly all these species were found in this harbour. Mr. Farran suggests the name *Doris Beaumonti* for a new species of *Doris*, specimens of which were obtained at Ballynakill; it had already been met with by Mr. W. I. Beaumont at Port Erin and Valentia, but had not been described. The following six species:—*Lamellidoris depressa*, *L. sparsa*, *Cratena viridis*, *Galvina vittata*, *G. cingulata*, and *Calma glaucoidea*, also have not been previously recorded from the Irish coast.

Additions to the Irish Fish fauna.

So very few papers on Fishes have been published in recent years, that we welcome Messrs. Holt and Byrne's articles on the British and Irish Gobies, on a young stage of the White Sole, and on the British and Irish *Stromateidae*, with particular pleasure. We only fear that the *Report on the Sea and Inland Fisheries of Ireland* for 1901, in which these interesting papers have appeared, may not be as readily accessible to zoologists as they deserve.

Part II. of the Report, which contains the scientific investigations, appeals to the readers of the *Irish Naturalist* more especially. Besides the articles referred to, the problems of the propagation of Salmon and Trout are also dealt with, as well as the relationship between the size and sexual maturity of Pollan. There is, in fact, quite a wealth of useful information in the Report for the ichthyologist and fisherman.

As regards the first paper only four species of Irish Gobies were known when Dr. Scharff wrote his "Catalogue of Irish Fishes" in 1889. *Gobius Friesii* was added to the Irish fauna a few years later under the name of *G. macrolepis*.

Messrs. Holt and Calderwood added *G. Jeffreysii* in 1895 (*Trans. R. D. Soc.*, vol. v.). Two additional Irish species are now made known to us, viz., *G. pictus*, and another, *G. scorpioides*, less than an inch in length. Two beautifully coloured illustrations of the male and female of this rare species are given. No such excellent figures of Gobies as those now supplied have ever been published before.

Only one new Irish species is added in the list of Irish *Stromateidae* above referred to, but it is a very remarkable and noteworthy addition. A specimen of American *Leris perciformis* had been displayed in the National Museum under the name of *Centrolophus pomphilus*; this Messrs. Holt and Byrne were able to identify after a careful scrutiny. It had been discovered by the late Fishery Inspector, William Andrews, in Dingle Bay in 1871, and named by him.

An instance of Deception on the part of a Thrush.

The bird referred to was observed to gather a large bunch of short grass from where it had been cut on the lawn in front of the house. Having done so it stood quite still for about half a minute, and then flew into a perfectly bare tree in the middle of lawn. Having gone through the form, apparently, of depositing a few blades of the grass in a fork of this tree it flew off into another leafless tree and went through the same show, evidently pretending to begin the building of its nest there.

After pausing a moment, and taking a sharp look round, it very quickly flew, and disappeared into a thick cypress, where presumably it was making its nest, and where its nest was afterwards found.

R. M. PATTERSON.

Strandtown, Co. Down.

Late stay of Swift.

Lord Antrim writes me that on October 8th he saw one Swift hawking strong with six House-Martins, at Glenarm, Co. Antrim—an unusually late date for the North of Ireland.

ROBERT PATTERSON.

Belfast.

Live Marten in Co. Wexford.

A pair of fine Martens (often known locally as "Marten Cats") frequented this place last spring (1903). One of them, a female, fell a victim to a rabbit-trapper. The other, as I am pleased to say, escaped so ignominious a death. This locality lies at some distance from any district regularly frequented by Martens, so that their occurrence here would seem to be an interesting instance of their tendency to wander.

G. E. H. BARRETT-HAMILTON.

Kilmanock, Arthurstown, Co. Wexford.

The Hairy-armed Bat.

This uncommon Bat (*Vesperugo Leisleri*) has been taken twice here within a fortnight. On August 19th one flew into a house at Whitehead Co. Antrim, in the early hours of the morning, and was brought to me the same day. It was a full-grown male. On September 1st, as Mr. John Cottney informs me, attention was drawn to sounds coming from a hole in a tree about 15 feet from the ground, at Hillsborough, Co. Down. On examination, three bats were found; one was a full-grown male, another was a smaller male, while the third was very small and apparently quite young. Unfortunately it was not preserved, but I saw the other two, and both are Hairy-armed Bats. It seems curious that two males should be found with such a very young one, which could hardly have survived a severe winter. It is 5 years and $2\frac{1}{2}$ years respectively since this bat has been recorded from Counties Antrim and Down.

ROBERT PATTERSON.

Belfast.

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